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An Adjuvant in Coccygodynia

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Benign Tumors of the Colon and Rectum

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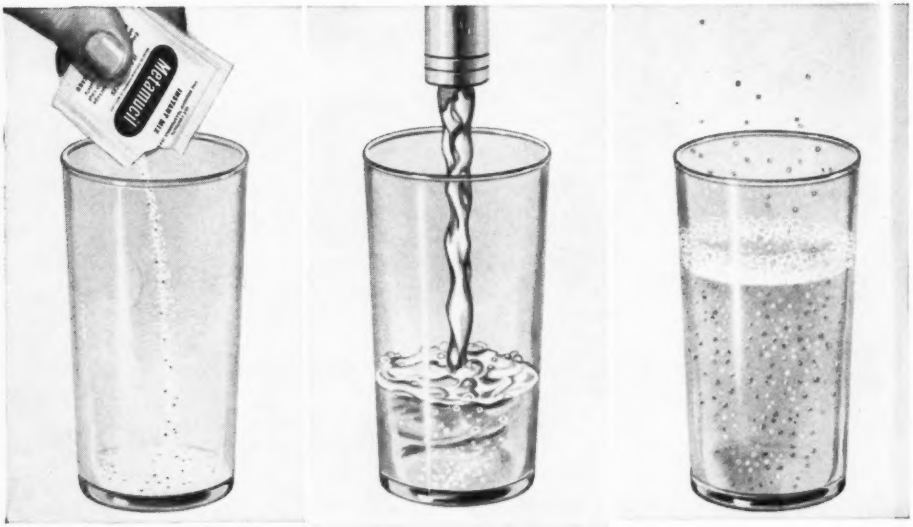

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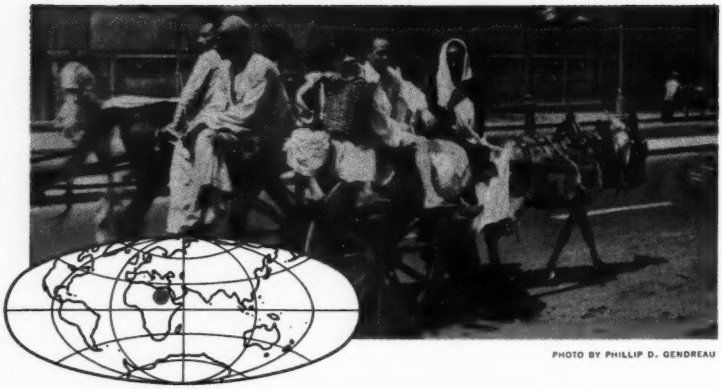

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Therapeutic Abstracts

Gallbladder

Repercussions of gallbladder lithiasis on the liver, hepatitis accompanying gallbladder lithiasis and its pathogenesis.

Prompted by eleven observations of gallbladder lithiasis studied clinically, the authors show the practical and theoretical importance of the hepatitis that accompanies lithiasic cholecystitis.

They describe two main varieties: mesenchymatous hepatitis without any biological functional repercussions on the liver and diffuse parenchymatous hepatitis with consistent biological functional repercussions.

As regards the pathogenesis of these lesions, the authors confirm that the gallbladder lesions precede those of the liver and show that the transmission mechanisms of the inflammation are varied: particular hepatic lesions correspond to each one of these different mechanisms.

Certain peribiliary fibrous cuffs in the portal spaces may be the result of non-microbial enzymatic reflux phenomena occasioned by a duodenobiliary dyskinesia co-existing with the gallbladder lithiasis.

The inflammatory lesions of the portal spaces and of Glisson's capsule seem to be due above all to the propagation by the lymph vessels of an inflammation of the gallbladder which is superadded to the lithiasis. This propagation might also be made through the intermediary of certain accessory portal veins going from the gallbladder to the liver.

The intrahepatic portal phlebitis described here for the first time seems to be secondary either to a lymphangitis of vesicular origin in the portal spaces or to a phlebitis of the accessory portal veins. It always coincides with a diffuse parenchymatous hepatitis, which may or may not be icterogenic, and is always accompanied by functional perturbations of the flow tests and sometimes also by disorders of the flocculation tests. This portal phlebitis thus appears to be a complication of inflammatory phenomena of Glisson's capsule and of the portal spaces which is propagated from the gallbladder and would seem to account for the diffuse parenchymatous hepatitis.

This would show the fundamental role of the gallbladder retention pocket in the diffusion of the inflammation: the inflamed gallbladder may also have repercussions on the duodenum and exaggerate its functional disorders. It can thus be said that the gallbladder lesions more often than not precede the other lesions. It is accordingly not surprising that cholecystectomy should more often than not lead to the disappearance of the hepatic lesions and bring about an improvement of the dyskinesia phenomena.

However, the functional disorders of the duodenum may precede the lesions of the gallbladder and even play a part in their appearance. In certain rare cases, the biological disorders or the hepatic lesions may be prolonged and maintained after cholecystectomy by

—Concluded on page 252

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More than 90 per cent of 37 patients with radiation proctitis showed pronounced improvement when treated topically with hydrocortisone.[1] In nonspecific proctitis with bleeding and ulceration, 1 to 3 weeks of topical hydrocortisone therapy produced marked relief or complete remission.[2]

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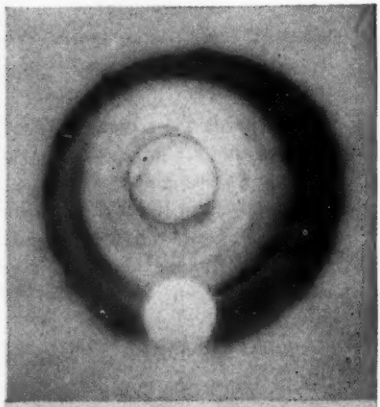
Ulcerative proctitis in woman, age 38. Rectal bleeding and diarrhea of 2 months' duration.



Same patient after 3 weeks of hydrocortisone suppositories. No further symptoms. Treatment discontinued at this time.

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Benign Villous Tumor

ALFRED HAAS, M.D.
SAUL A. RITTER, M.D.
New York, New York

Benign villous tumor, also known as villous papilloma or papillary adenoma and by other designations, is a relatively uncommon growth that arises from the superficial mucosal epithelium of the mucous membrane of the rectum and more rarely of the colon. Lambling[2] aptly described the growth as grossly resembling a marine animal known as "the anemone of the sea." It appears as a soft, velvety, friable, lobulated sponge-like mass, grayish red in color and is mainly composed of filamentous finger-like vascularized villi of fine connective tissue which are covered with columnar epithelium, interspersed with mucous secreting goblet cells. The villi are usually grouped in lobules and are attached to a broad superficial basement membrane.[1,2,3] Only tumors of this description should be called villous tumors.

Quenu and Landel,[1] in 1899, noted the histological difference between villous tumor and adenoma. Villous tumor arises from the superficial cells of the mucosa of the colon and rectum, whereas adenoma is a primary growth of the underlying mucosal glands with little or no involvement of surface epithelium. They considered villous tumor to be a benign type of cylindrical epithelioma that develops from the mucosal surface and seems to be a histological transition between benign and malignant formation. They were the earliest observers to note that this tumor is most active at its periphery and is potentially malignant. They named it epithelioma superficiale vegetans recti.

It is a slow growing tumor that may exist for a long period of time before producing symptoms. It must be kept in mind that about 20 percent of these growths undergo malignant degeneration.[3,5] By far the majority remains benign, but the possibility of malignant changes has to be considered.[1,3,4,10]

David[3] indicated that a close relationship exists between papilloma and adenoma, that papilloma contains adenomatous constituents. He called the tumor "Adenopapilloma."

Dukes[6] explained and graphically illustrated the differences in the development of papilloma and adenoma: Both have a common origin from cells in mucous membrane of the colon or rectum. Papilloma arises from the surface epithelium by dichotomous proliferation to form villi. It is a soft tumor with sessile attachment, whereas adenoma is

derived from epithelial cells of the mucosal glands situated deeper in mucous membrane beneath the crypts of Lieberküehn. It grows as a compact rounded mass of glandular tissue and as the result of pressure and peristaltic action, acquires a narrow mucosal pedicle.

Adenoma is not more likely to undergo malignant degeneration than papilloma. Adenoma is a more common tumor and more frequently sectioned. Therefore it only seems more common for carcinoma to be reported in adenoma.[6]

Malignant transformation in villous tumor may occur as carcinoma in situ, or intramural with infiltration of the basement membrane and muscularis mucosa. Malignancy may occur at any level of the tumor.[4, 22]

When malignant degeneration does occur, it is slow in appearing, slower in invasion and remarkably late in metastasis.[1, 23]

Ewing's opinion about the pathologist's diagnosis is still true. What is to one no more than an index of high cellular activity, means to a second precancerous lesion and to a third established malignancy.

Sunderland and Binkley,[4] in an excellent article, reported their detailed observations of the histological and clinical findings in 48 cases of papillary villous tumors which they had at first deemed to be predominantly benign. However, on multiple microscopic examinations of the papillary adenomas in their series, 68.7 percent were found to have areas of cytological carcinoma, either in the original tumor or in a recurrence at the site of excision; 39.5 percent of them developed invasive carcinoma. They indicated that the normal epithelial mucosa of the colon is constituted in two parts. The superficial epithelium and underlying mucosal glands, both have a common embryological origin. From their findings, they introduced the concept that the difference between papilloma and adenoma is not merely one of superficial surface configuration but a difference in type of growth; whereas adenoma is a tumor primarily of mucosal glands with little or no involvement of surface epithelium, the papilloma is the reverse —a tumor of the mucosal surface epithelium with resultant secondary glandular changes. Sunderland and Binkley named villous tumor papillary adenoma.

Swinton[10] believes that mucosal polyps are the result of some "inherent defect in cellular growth and not the result of inflammatory process." Out of 436 adenomas, he found 34 or 8 percent were papillary adenomas. Half of their patients with papillary adenoma who did not have some type of resection, had repeated recurrences. Three of them developed invasive carcinoma.

Papillary adenomas are sessile in attachment. When they are pedunculated it is due to the weight of the tumor which drags it downward, or because the mucosa to which it is attached may be redundant. If the growth is situated low in the rectum it may prolapse through the anus.[2, 7]

In a recent article, Delepierre and Soots[8] reported 28 verified villous tumors of the rectum and sigmoid of which 17 were benign and 11 were secondarily malignant. Four cases were multiple tumors separated by several centimeters of normal mucosa, three were the size of an orange, all developed over a prolonged period of time. The malignant cases were treated as cancer

of the rectum by abdominoperineal resection or a Babcock abdominal resection. The operations performed by the latter method were complicated by rectal incontinence. Villous tumors in the rectum may be rarely multiple.[1, 8] They have a tendency to spread peripherally.[4] The presence of ulceration or induration of the tumor is suggestive of malignancy.[1, 4]

Clinical Symptoms: The tumor may be completely *silent* for a long time. It is usually large when discovered. The characteristic mucoid discharge may be one of the first symptoms, particularly when the mass is situated in the sigmoid or the rectum. The discharge of viscous, clear material is often mistaken for diarrhea. As the tumor increases in size, the discharge may become so profuse that serious electrolyte imbalance may ensue and may explain the weakness of some of these patients.

The villous tumor is vascular and friable; bleeding may follow trauma at stool, ulceration or malignant degeneration. There may be changes in bowel habits or in the consistency of the stools.[1, 5] Tumor fragments are sometimes eliminated in the stools.[1, 5] Pain, tenesmus or heavy sensation in the rectum are not uncommon.[1, 2]

The association of hypokalemia and/or hyponatremia with villous tumor was first observed in a patient by Starr, Mueller and McKittrick in 1956[11] and several reports on the subject have since appeared.[12, 13, 14, 21]

Roy and Ellis,[15, 17] in 1959, reported two interesting cases. The first was a 70-year-old man with a history of "mucous diarrhea" for 10 years. He was admitted to the hospital in a state of collapse, dehydration and swelling of the abdomen. Upon examination, he was found to have a degenerated villous tumor of the rectum. The blood sodium was 115mEq/L and the potassium was 3.2 mEq/L. The electrocardiogram was modified by depression of the segment RST, characteristic of hypokalemia. Suspecting a relationship between the hypokalemia and the villous tumor, they then collected and analyzed the mucous discharge from the rectum, which revealed potassium concentration of 2.8 mEq/L and sodium 122 mEq/L. Intravenous infusions of solutions of glucose, sodium, potassium and plasma restored the electrolytic balance in 10 days, then the tumor was removed. Roy and Ellis reported a second patient who was also in a state of collapse and had a previous history of "colitis." Upon examination, a villous tumor was discovered by rectoscopy and the electrolytic changes in the blood were identical with the previous case.

Hoffman[16] reported a similar case in which hyponatremia was associated with a villous tumor. A man, 73 years old, presented all the clinical symptoms of apathy, edema of the brain, dehydration, anorexia, vomiting, abdominal cramps, oliguria, edema, azotemia and collapse. The blood sodium was 119 mEq/L and the potassium was 3.4 mEq/L. This patient was found to have a rectosigmoid tumor which discharged 700 cc. of mucous fluid daily from the rectum, analysis of which revealed a sodium content of 191 mEq/L and potassium of 1.5 mEq/L.

Examination: If the tumor is in the lower rectum it is felt as a velvety, soft mass. Areas of induration may be best recognized by the palpating finger. It is important to explore the base of the tumor.

The proctoscopy may show that the

tumor secretes an abundant quantity of mucoserous secretion. After good preparation of the patient, the characteristic picture of the tumor is visualized, ulcerations may be seen, and biopsy fragments taken.

Villous tumors may occur in either sex, between the ages of forty and seventy years with few exceptions.[1, 2] The site of origin of these tumors is usually in the rectum and to a lesser extent in the rectosigmoid. Sunderland and Binkley[4] reported one case in the rectosigmoid out of 48 cases; the others originated in the rectum. It is unusual to find them higher in the colon; however, a few such cases have been reported and are cited herewith: splenic flexure,[3] hepatic flexure,[19] transverse colon,[14, 18] ascending colon.[20] We hereby wish to report one case of villous tumor of the cecum.

Treatment: The prognosis of the benign villous tumor is good if it is completely removed.

Because of its importance for the prognosis is should be directed to submit the whole specimen including its base to the pathologist. Every tumor removed, including its base, should be completely sectioned to rule out malignancy. The point of attachment is of considerable importance. Diathermy coagulation of the tumor should be avoided. In the lower rectum the tumor can be gently dislocated by the finger out of the rectum, suturing bit by bit the edges of the elliptical rift.

In the upper rectum the posterior rectotomy is indicated. Apart from a few special indications the sphincter ani should not be severed, only the method described by Kirschner as superior rectotomy should be carried out, with resection of the coccyx and with mobilization of the pelvic rectum. If the higher parts of the colon are involved (ascending, transverse, and descending) a segmental resection can be done with safety, with proper preparation of the bowel.

In smaller tumors or in very wide bowel segments like the cecum, a colotomy with wide excision of the base of the mass forestalls recurrence. A circular involvement requires segmental resection. If the circular tumor is in the rectum an abdomino-perineal procedure is indicated.

Obstruction by the tumor requires colostomy and secondary segmental resection. When multiple biopsies of a villous tumor reveal no malignancy and the tumor is soft, without induration or ulceration, it may be assumed to be benign.[10] Complete local removal of the growth with a peripheral margin of normal mucosa is safe assurance against recurrence.[4, 10]

We wish to report three cases of benign papillary adenoma, one unusual because of its location in the cecum. We have been unable to find a previously reported case of papillary adenoma in that location.

Case One: Patient, a white woman, 46 years old, was admitted to Misericordia Hospital, in New York City, on October 2, 1945. She complained of obstinate pains in the right lower quadrant of the abdomen and "diarrhea" for three years prior to admission. She had from six to ten bowel movements daily which consisted of copious quantities of clear white fluid. Occasionally the stools were formed and contained traces of blood. She had lost twenty pounds in weight within three years, and felt tired, exhausted and was unable to continue her housework.

FIGURE 1 Case I

FIGURE 2 Case I—Low Power

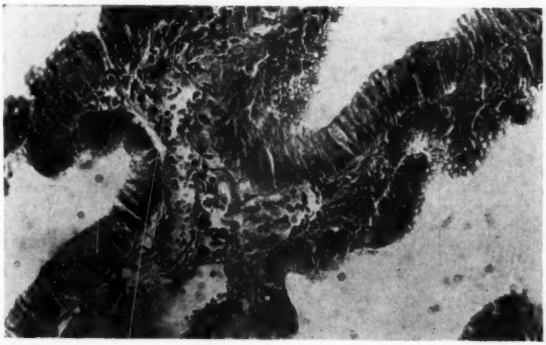

FIGURE 3 Case I—High Power

Past History: Appendectomy for gangrenous appendicitis twenty years previously.

Essential Findings: The patient appeared to be chronically ill. A tender mass could be felt in the right iliac fossa beneath an old appendectomy scar. The uterus contained several fibromata. Digital rectal and sigmoidoscopic examinations were uninformative.

Laboratory Findings: Stools contained no blood upon repeated examinations, otherwise irrelevant.

Barium enema revealed a filling defect in the cecum. There was considerable irritability of the cecum and ascending colon, with inability to retain the barium. Angulation of a terminal loop of the ileum was believed to be due to adhesions from a previous operation. The palpable mass and the roentgen findings suggested malignancy of the cecum.

Operation: October 10, 1945. After separating numerous adhesions, a tumor mass was palpable in the head of the cecum. It was soft, sponge-like and freely movable within the cecum. It was decided not to perform an ileocolic resection but rather to incise the cecum and inspect the tumor. A cecotomy through the anterior tenia revealed a large soft polydendritic papillary tumor, attached to the lateral wall of the cecum by a wide superficial bandlike mucosal pedicle.

The tumor was locally excised with a margin of apparently normal mucosa. The cecum was closed with interrupted sutures. Examination of the colon distal to the cecum revealed no other lesion. The abdomen was closed without drainage.

Gross specimen (Figure I) was an irregular polydendritic mass, the size of a large tangerine.

Microscopic Examination (Figures 2 and 3) demonstrated elongated dendritic villous strands of vascularized connective tissue that were covered by columnar epithelial cells. Some hemorrhagic and inflammatory changes were present in the wall of the tumor. In portions of the tumor the epithelial cells were irregular in size and shape with hyperchromatic nuclei, but no infiltration of the basal membrane or any evidence of malignancy were found.

The Pathological Diagnosis: Villous tumor of cecum.

The postoperative course was uneventful. Upon recent follow-up examination the patient was found to be in good health. The bowel movements have been normal and regular since operation and she gained fifteen pounds.

Case Two: Patient, a white woman, 64 years old, was admitted to Misericordia Hospital in New York City, on October 24, 1945, complaining of "diarrhea." She had about six watery stools a day for three years, lost thirty pounds and felt weak. Two years previously, a mass suddenly protruded from the anus while straining at stool. She reduced it by hand and there was no recurrence of the prolapse. There had been no bleeding from the rectum.

Essential Findings: Blood pressure 155/80. The abdomen was slightly distended. A median hypogastric scar from a previous uterine operation was present. No mass was palpable in the abdomen.

Rectal Digital Examination: A soft movable slippery tumor was palpated about six centimeters proximal to the anus.

Sigmoidoscopic Examination: A soft

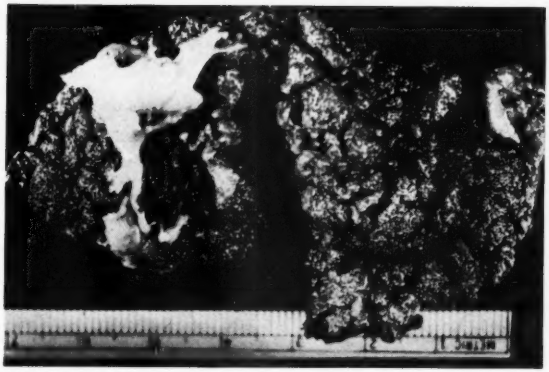

FIGURE 4 Case 2

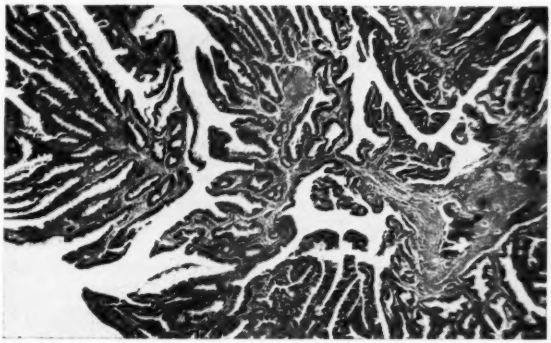

FIGURE 5 Case 2—Low Power

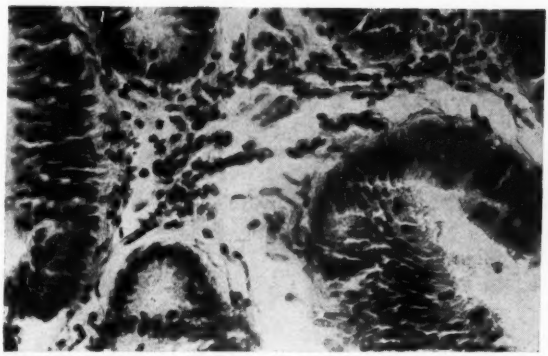

FIGURE 6 Case 2—High Power

fleshy, movable, dendritic tumor was seen composed of numerous fine villi. No ulceration was visible. The sigmoidoscope passed easily beyond the tumor up to 32 centimeters from anus. No other lesion was present. Much sticky fluid was discharged from the tumor during the examination.

Biopsies of the tumor were examined and reported by Dr. R. Paltauf. It was found to be composed of a large number of villi of fine connective tissue covered by columnar epithelial cells of uniform size and normal staining properties with abundant cytoplasm and basically situated nuclei. A few inflammatory cells were present in the connective tissue stroma. There was no evidence of malignancy.

Barium enema revealed a polypoid mass in the right lateral aspect of the rectum and a few diverticulae in the sigmoid colon.

Preoperative Diagnosis: Benign villous tumor of rectum.

Operation: October 26, 1945. Under general anesthesia, the sphincter ani was dilated and the entire tumor was brought out gently through the anus. It was attached to the rectal mucosa by a broad band-like mucosal pedicle. The tumor was excised with a peripheral margin of normal appearing mucosa. The incision was sutured step by step, as the mass was gradually excised. It was a soft, fleshy tumor composed of numerous villi and measured 10 cms. in length, 5 cms. in width and was 4 cms. thick (Figure 4).

The Histological Examination of the tumor (Figures 5 and 6) confirmed the biopsy findings: Benign villous tumor of the rectum. The patient made an uneventful recovery and was discharged on the ninth postoperative day. Patient died in 1947 of a cerebral hemorrhage. In the years after the operation she had no trouble or complaints about the rectum or colon.

Case Three: Patient, a 58 year old white male was admitted to the LeRoy Hospital, in New York City, on September 21, 1959.

Chief Complaint: Intermittent rectal bleeding for several years and general weakness.

General Examination revealed no abnormal findings. B.P. was 140/80. Blood count and urine analysis were normal.

Digital Examination of the rectum: The lower pole of a soft mass was palpable.

Sigmoidoscopic Examination: Ten centimeters proximal to the anus a large, fleshy, lobular mass was present on the left posterolateral wall of the rectum. Several biopsy specimens were taken.

Microscopic Examination by Dr. R. Paltauf demonstrated a papillary growth composed of delicate elongated dendriform folds of well vascularized stroma covered by columnar and goblet cells, which show no loss of polarity. Various sized glandular lumina were seen to contain secretory material mingled with blood. No invasive tendency was demonstrated.

Operation: September 23, 1959. Following coccygectomy, a posterior superior rectotomy was performed. The tumor, the size of a tangerine was attached by a broad basement membrane to the left posterolateral wall of rectum and adjacent to it were two tiny isolated polyps. The tumor was grasped and locally excised with a narrow margin of normal appearing mucosa (Figure 7). The adjacent polyps were destroyed by electro-coagulation. There was no infiltration of the mucosa. The incision

FIGURE 7 Case 3

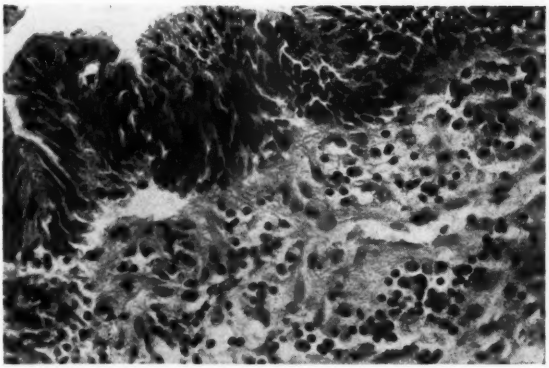

FIGURE 8 Case 3—High Power

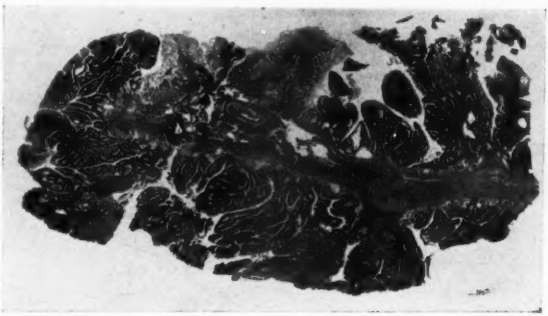

FIGURE 9 Case 3—Low Power

was closed with interrupted sutures and a drainage tube was attached to the rectal sphincter. The patient made an uneventful recovery.

Histological examination of the tumor reported by Dr. J. Pincus confirmed the biopsy diagnosis of villous tumor of the rectum (Figures 8 and 9).

We wish to thank Dr. R. Paltauf, pathologist at Lenox Hill Hospital, for his very helpful preparations of the microscopic and photographic slides of the specimens to make the pictures included in this paper possible.

Summary

1. Adenoma and papillary adenoma have a common origin and are different because of manner of growth.

2. Some of these benign tumors tend to become malignant. When benign, they should be excised "en masse" with a margin of normal mucosa.

3. Villous tumor is a latent lesion, which often tends to become mildly malignant. When malignancy has invaded its basement membrane and bowel wall, it should be treated as cancer, by radical surgery.

4. Villous tumor when large, secretes copious amounts of seromucous fluid, that may cause excessive loss of sodium and potassium electrolytes and lead to electrolytic imbalance. This may explain the weakness, exhaustion and even collapse of some patients with villous tumor.

5. The first of our cases of villous tumor herein reported is unusual because of its location in the cecum. We have been unable to find such a case previously reported in that location.

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Clini-Clipping

INTUSSUSCEPTION

A. Ileocecal
B. Ileocolic
C. Enteric
D. Colic
E. Ileocecal and Ileo-Ileac
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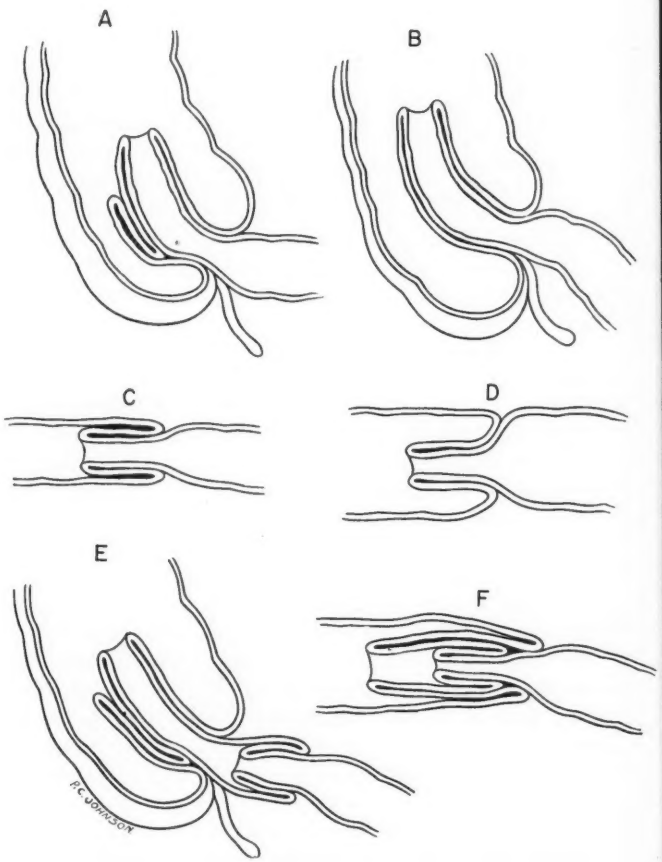

A Clinical Pathological Study of Nine Cases

Transitional Cloacogenic Carcinoma

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Nine cases of transitional cloacogenic carcinoma are presented. The clinical and pathological features of these lesions are described. The significance of these features, as related to treatment and prognosis of transitional cloacogenic carcinomas, is discussed.

The term "transitional cloacogenic carcinoma" was proposed by Helwig and Grinvalsky in 1956,[19] in a paper that dealt with histological considerations of carcinomas at the anorectal junction. The authors confirmed and re-emphasized the existence of a zone of transitional or stratified columnar epithelium interposed between the cylindrical rectal mucosa and anal squamous mucosa. Various authors[19, 22, 33, 43, 45] have called attention to the existence of this zone. It remains, however, generally neglected in anatomical and histological texts.

This zone, which appears, grossly, membranous and transversely wrinkled, ranges from 0.3 to 1.1 cms. in width in adults.[19] Its location corresponds to the columns and sinuses of Morgagni and terminates at the level of the anal valves. This zone represents persistence of embryological remnants of cloacal entoderm. Two types of accessory structures arise within this zone: the anal glands and peculiar aberrant glands. The anal glands have their orifices in this area and can extend for considerable distances caudad and probably less frequently cephalad.[19] They are lined principally by transitional cell type epithelium; their tips however, appear to be of ectodermal origin.[43] The aberrant glands, which remain confined to the lamina propria, are similarly lined by a transitional type of epithelium, with an inner layer of mucin producing cells. They are strikingly similar to the intramucosal urethral glands of Littré, which, in view of their probable common cloacal origin, might be expected. The mesodermal components of the membranous cloacogenic area includes richly vascularized collagenous tissue and smooth muscle bundles.

We have similarly been able to study and confirm the existence of this membranous zone in adults and in addition have studied it in anorectal specimens of older fetuses and term infants. The zone, in this group, occupies a consider-

ably greater relative area than in adults, ranging from 0.1 to 0.3 cms. in width. The zone in adults usually appears scalloped or crested, while it appears flatter in infants. Thus it lends itself to easier examination in the newborn age group.

Various authors have been impressed with the wide variety of histological patterns seen in carinomas arising at the anorectal junction.[13,15,19,44] This has led to the use of an enormous number of designations for these lesions; i.e. "basaloid,"[18,48] "basaloid-squamous,"[48] "epidermoid,"[1,10,16,17,40] "basal cell," and "cylindroma,"[23] to name a few. Helwig and Grinvalsky[19] first proposed the genesis of these anorectal lesions from the complex membranous cloacogenic zone, thus explaining the wide histological variations in these lesions. They suggested that in as much as carcinomas at the anorectal junction have histological patterns relating them to embryological remnants of cloaca, the term "transitional cloacogenic carcinoma" be adopted as the appropriate designation.

We have had the opportunity of studying four such lesions during the previous year and have been able to find five additional cases in our departmental files. These five cases, though coded as epidermoid and squamous carcinomas, were found to fulfill the criteria of transitional cloacogenic carcinoma. A clinical pathological study of this group of lesions as a separate entity, divorced from true carcinomas of the anus, anal canal and rectum, has not, to our knowledge, been previously presented.

It should be noted that Part II of Helwig's and Grinvalsky's fine paper, now in preparation, will be a clinical pathological correlation of anorectal carcinomas.

Although we admit to the relative paucity of nine cases in such a presentation, we nevertheless felt, it might be of some value in elucidating certain unique features of this group of lesions and also as a guidepost for future, more extensive studies.

Case Reports

● *Case 1.* A 50-year-old, white, female, clerical worker was admitted to the hospital on November 30, 1948 because of increasing constipation, poor appetite and general malaise. History of rectal bleeding "past two years." Passed off as hemorrhoids because it was not severe bleeding. Patient was a Christian Scientist. Weight loss: six to eight pounds last six months. Examination revealed a tumor, measuring 6 x 5.5 cm., involving lower rectum and anus with extension to posterior vaginal wall. On December 4, 1948 an abdominal-perineal resection with posterior vaginectomy was performed. Pathological diagnosis was epidermoid carcinoma, Grade II, involving entire thickness of bowel wall and posterior vagina up to mucosa. Five local lymph nodes and one from the left urethral area contained metastatic carcinoma. At operation the liver and peri-aortic lymph nodes appeared uninvolved. Considerable left lateral extension was noted.

Patient was readmitted on September 18, 1950 because of severe vaginal bleeding. Abdominal exploration revealed considerable granulation tissue with nodules of carcinoma at the previous operative site. There was a diffuse oozing and new packing was inserted. Bilateral enlarged inguinal nodes were present.

FIG. 1 Section of anorectal junction of 25-week-old fetus, displaying membranous mucosa of cloacogenic zone. The rectal mucosa is situated at the left and a small segment of anal squamous mucosa is visible at upper right. Note abrupt transition. A portion of an anal duct is evident in the submucosa of the membranous zone (H&E, x 35).

Patient's final admission was on November 8, 1950 at which time a lobotomy was performed because of intractable pain, apprehension and despair. Patient was discharged on November 28, 1950. She died in the spring of 1951 (exact date unknown), approximately 2½ years following her original surgery. Autopsy not obtained.

Review of the slides from the abdominal-perineal specimen reveal extension of this tumor cephalad and caudad beneath the rectal and anal mucosa. The tumor consists of broad nests of large oval polygonal cells containing rounded, vesicular nuclei and pinkish cytoplasm. The tumor nests occasionally anastomose or assume a festoon-like arrangement. The bulk of the tumor is located in the cloacogenic zone; the mucosa above it is ulcerated. Large areas of necrosis are noted within the larger tumor nests and there is moderate mitotic activity. A few foci of early keratinization are noted. Festoon-like arrangement of the tumor is prominent in the lymph node metastases, with palisading of nuclei.

● *Case 2.* A 52-year-old, white, male, embassy employee was admitted to the hospital on July 7, 1950 because of blood in stool and painful sensation around rectum during bowel movements for past two or three months. Gradual inability to have normal sized bowel movements. Ten pound weight loss over past three months. Examination revealed a tumor completely encircling anus, extending 5 cms. to rectum. Frozen to capsule of prostrate. Bilateral, enlarged, firm inguinal nodes. On July 20, 1950 an abdominal-perineal resection was performed with extensive clearing of ischial fossas. A right inguinal node was excised and contained metastatic carcinoma. The liver and peri-aortic nodes appeared free. Pathological examination of the abdominal-perineal specimen revealed a firm tumor mass, 3.5 x 2 cms. located just above the anus.

The mass contained a central ulcer crater measuring 2.5 cms, in diameter. Many enlarged local lymph nodes. Pathological diagnosis was extensive invading epidermoid carcinoma; five of seven nodes contain metastatic carcinoma. Patient discharged on August 5, 1950 and subsequently begun on course of radiation therapy.

Readmission on April 16, 1951 because of extension of tumor to bladder and post-irradiation urethral stricture. Urethral dilatation begun. Third ad-

TABLE I CLINICAL SUMMARY OF NINE CASES OF TRANSITIONAL CLOACOGENIC CARCINOMA

CASE	AGE (YRS.)	SEX	DURATION OF SYMPTOMS	CLINICAL FINDINGS	THERAPY	RESULTS
1.	50	F	2 yrs.	Tumor mass meas. 6 x 5.5 cms. involving lower rectum and anus; extension to vagina and laterally	Abd.-per; post. vaginectomy	Appr. 30 mos. postop.; died; extensive metast. disease
2.	52	M	2-3 months	Anal tumor encircl. anus, extending 5 cm. to rectum. Enlarged inguinal nodes	Abd.-per; rt. inguinal node excision (pos.)	14 mos. postop.; died, extensive metast. to liver, bone, nodes
3.	48	F	3 weeks	Small lesion, ant. wall rectum, 5 cm. from anal orifice	Abd.-per.	17 mos. postop., alive; liver metast. (7); further follow-up not available
4.	49	F	3 months	Anorectal globular tumor, 6 x 3 cm.; left lat. wall	Abd.-per.	4½ yrs. postop. well; no evidence of recurrence
5.	67	F	4 months	Anorectal tumor; 4 cm. diam.; extends to vagina	Abd.-per.; Partial vag. Excis. inguin. nodes 4 mos. later	33 mos. postop.; died, extensive recurrent disease
6.	45	M	2½ months	Posterior ulcer. rectal tumor, extends 4 cms. from dentate line; liver nodules	Abd.-per.	4 mos. postop.; died; extensive metast. to liver, lungs, bone and inguinal nodes
7.	78	F	1 month (rectal tumor 7 yrs. prev. x-ray Rx. "disappeared")	Anorectal tumor; 3.5 x 2.5 cms.	Perineal excision	6 mos. postop., well; no recurrent disease
8.	52	F	1 month	Ulcer crater; 1 cm. diam.; right lat. wall, just inside anus	2-stage abd.-per.	4 mos. postop., well; no recurrent disease
9.	53	F	8 months	Tumor meas. 7.2 x 4.2 cms. rectum; extends from dentate line; rt. lat. extension	Abd.-per.	3 mos. postop., well, no recurrent disease

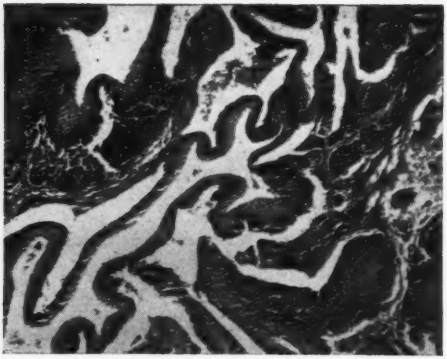

FIG. 2 (CASE 2) Tumor displaying papillary and festoon-like pattern (H&E, x 35).

mission on August 15, 1951 because of vesico-perineal fistula.

Final admission on September 10, 1951. Patient expired on September 18, 1951, some fourteen months following original surgery. Post-mortem examination revealed extensive pelvic metastatic disease, metastases to peri-aortic lymph nodes, a single nodule in the liver, metastases to the vertebrae and inguinal lymph nodes and a vesico-perineal fistula.

Review of the slides from the abdominal-perineal specimen reveals extension of the tumor beneath the anal and rectal mucosa. The cloacogenic mucosa is ulcerated. The tumor consists of broad nests and anastomosing bands of oval and polygonal cells with oval, vesicular nuclei and pale pinkish cytoplasm, A festooned pattern is prominent in areas and there is palisading of nuclei here. Moderate hyperchromasia and cellular anaplasia is present. Mitotic activity is prominent. No keratinization is noted. Central necrosis, appearing as eosinophilic debris, is noted in larger tumor nests. Tumor plugs are noted within many submucosal and adventitial lymphatic and venous channels.

The autopsy slides reveal similar histopathology in the various metastatic sites.

● *Case 3.* A 48-year-old white housewife was admitted to the hospital on June 15, 1952 because of bloody stool for some three weeks prior to admission. Examination revealed a small lesion located on the anterior wall of the rectum, 5 cms. from the anal orifice. On June 20, 1952, an abdominal-perineal resection was performed. The liver, peri-aortic lymph nodes and posterior vagina appeared free of involvement. No inguinal lymphadenopathy.

The specimen consisted of a length of anus, rectum and sigmoid. An area of "discoloration" measuring 2 cms. in diameter was noted at the anorectal junction. A large ulcer, measuring 3.5 x 1 cm. was located at a distance of 3.5 cms. from the junction. Pathological diagnosis was squamous carcinoma, rectum, Grade III; negative lymph nodes.

Patient was discharged on July 2, 1952. She was readmitted for the second time on January 1, 1953, because of jaundice and left hip and leg pain. Examination revealed an icteric female without palpable lymphadenopathy.

The liver was enlarged, four fingers down, firm and nontender. X-rays revealed hypertrophic changes in vertebrae. Patient discharged on Jaunary 12, 1953 as probably metastatic liver carcinoma, primary rectum. No tissue diagnosis. No further followup available in this patient.

Review of original tissue slides reveals the bulk of the tumor situated beneath the rectal mucosa. Tumor is also noted at the anorectal junction with ex-

tension beneath the anal mucosa. The tumor assumes the pattern of broad, occasionally anastomosing nests. The cells are generally oval, uniform in size with ovoid and elongated vesicular nuclei. Nuclear palisading is prominent in the tumor nests. No keratinization is evident. Mitotic activity is minimal.

● *Case 4.* This was a 49-year-old white famale beautician admitted to the hospital on September 8, 1954 because of rectal pain which began five months prior to admission. No rectal bleeding or constipation. Examination revealed an indurated mass in the left postero-lateral wall of the anal canal, extending from the region of the external sphincter, cephalad for a distance of 4 cms. Shortly following admission a wide excision of this tumor was carried out and on September 21, 1954, an abdominal-perineal resection was performed. At operation there appeared to be left lateral extension; liver and periaortic nodes appeared free.

The biopsy specimen consisted of a globular mass measuring 6 x 3 x 2.5 cms. with a central indurated, gritty lesion measuring 3.5 cms. in diameter. Pathological diagnosis was epidermoid carcinoma, Grade II-III. Examination of the abdominal-perineal specimen did not reveal any adventitial extension of tumor or lymph node metastases.

Patient hospitalized on 10-22-57 for second time, for repair of incisional hernia at colostomy site. No evidence of residual or recurrent disease. Patient living and clinically free of recurrent carcinoma at present time.

Review of original tissue slides (biopsy) reveals extensive ulceration and extension of the tumor into the muscle layers. Mucosal surfaces are almost entirely absent in these sections. The tumor consists of broad bands and nests of large, oval and occasionally spindly cells with oval, hyperchromatic nuclei. There is peripheral palisading of nuclei in many nests. Mitotic activity is infrequent. No keratinization is noted.

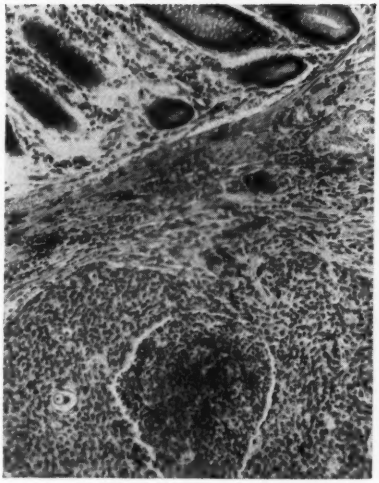

FIG. 3 (CASE 3) Tumor nest below rectal mucosa, displaying central necrosis and early focal keratinization, lower left (H&E, x 100).

● *Case 5.* This 67-year-old white female was admitted to the hospital on 12-13-54 because of a "lump which had developed at edge of rectum" some four months prior to admission. Pain associated with sitting was also a prominent symptom. Some four years prior to the present admission, patient had been treated for an "abscess of the rectum" which cleared up. In addition history of hemorrhoids treated by injection. No history of rectal bleeding, tenesmus or weight loss.

Examination revealed a spherical lesion measuring 4 cms. in diameter bulging beneath the rectal and anal mucosa. Lesion located at right lateral

wall. Several small hemorrhoidal tags noted. On 12-21-54, an abdominal-perineal resection with posterior vaginectomy was performed. Extension of the tumor anteriorly was evident at operation. Liver and pelvic lymph nodes did not appear remarkable. Pathological diagnosis was epidermoid carcinoma, grade III, with extension to rectum and vagina. Lymph nodes negative.

Readmitted 4-19-55 for enlarged right inguinal nodes. Right groin resection performed. Pathological diagnosis was epidermoid carcinoma, grade III, metastatic in inguinal nodes. Third admission on 3-19-56 for chronic perineal abscess. This was incised and material submitted to pathology, revealed epidermoid carcinoma, grade III, recurrent, perineum. Radiation therapy was instituted; dosage and duration unknown. Fourth admission on 4-10-57 for fever and shortness of breath. Chest x-rays revealed pulmonary fibrosis and emphysema. A large, ulcerating tumor mass was found in the left perineal region. Patient was transferred to a nursing home. She expired in September of 1957, some thirty-three months following her original operative procedure, with clinically extensive recurrent and metastatic carcinoma. No autopsy performed.

Review of original tissue slides, reveals bulk of tumor located in cloacogenic zone. The tumor assumes an almost papillary pattern with prominent festooning. The cells are generally ovoid and round with dark, oval nuclei. Palisading of nuclei is noted. A few small foci of early keratinization are present. There is moderate anaplasia and mitotic activity. The tumor extends beneath the anal and rectal mucosa and thru the entire thickness of the bowel wall.

● *Case 6.* This 45-year-old white male bartender was admitted to the hospital on 8-14-58 because of a nine-week history of painful defecation and blood and mucus in stools. Patient had had intermittent bouts of painful bowel movements with streaks of blood in stools for past two years prior to admission. He was admitted for elective hemorrhoidectomy. Under general anesthesia, the anal sphincter was dilated and a wide, firm posterior fissure was noted, extending from a central tag, up to a distance of 4.5 cms. above the anorectal junction. The edges were slightly curled and the base was firm. Biopsies revealed anaplastic carcinoma. On 8-22-58 an abdominal-perineal resection was performed. At exploration liver nodules were noted. These were not biopsied. Pelvic lymph nodes did not appear remarkable.

The pathological specimen consisted of a length of anus, rectum and sigmoid colon. Extending from an anal tag was a wedge-shaped, centrally ulcerated, grayish, granular tumor mass, for a distance of 4 cms. above the pectinate line. Numerous satellite tumor nodules were noted in the adjacent lower rectum. Thirteen lymph nodes dissected in the rectal adventitial tissues. Microscopic examination reveals an extensively ulcerated tumor extending through the entire thickness of the bowel wall and into the adventitial tissues. The tumor consists of varying sized, small nests of small oval and spindly cells with club-shaped hyperchromatic nuclei. There is generally a narrow cytoplasmic rim. Many cells have an "oat cell" appearance. Occasional nests assume an adenoid pattern. Branching anal ducts are noted in several sections, displaying marked atypical changes and

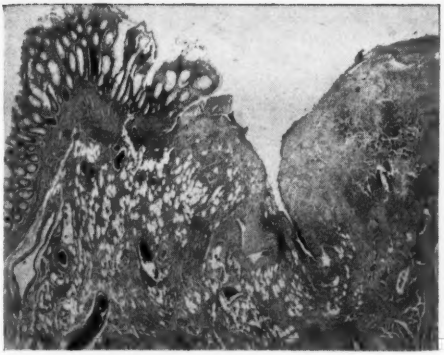

FIG. 4 (CASE 6) The rectal mucosa is noted at left; the membranous zone is ulcerated and small aggregates of tumor cells are noted in the submucosa. Dark tumor plugs are seen beneath the rectal mucosa, many within lymphatic and venous channels (H&E, x 35).

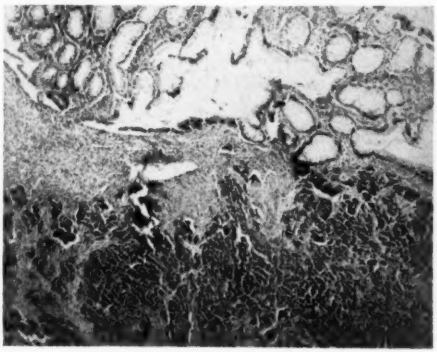

FIG. 5 (CASE 6) Higher magnification. Aggregates of darkly staining, small tumor cells extending beneath and up to the rectal mucosa (H&E, x 100).

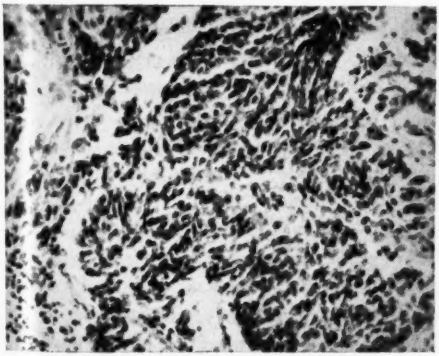

FIG. 6 (CASE 6) High magnification. Spindle and club-shaped, hyperchromatic nuclei are noted. Anaplasia and poor differentiation of tumor is evident (H&E, x 430).

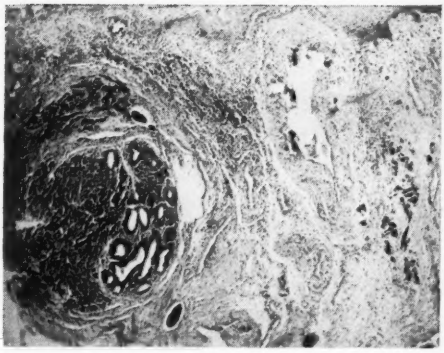

FIG. 7 (CASE 6) Anal extension of tumor at right with squamous mucosa above. Branching anal duct is noted surrounded by dense aggregates of tumor cells (H&E, x 35).

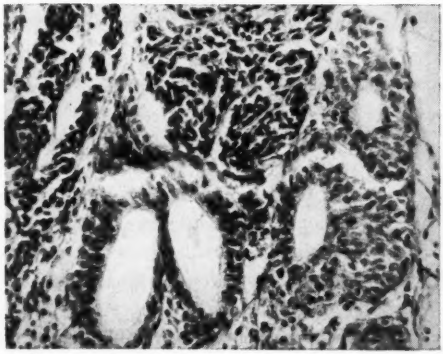

FIG. 8 (CASE 6) High magnification of anal duct area, demonstrating atypism and disruption of the outer layers of the anal ducts with origin of the tumor from these structures (H&E, x 430).

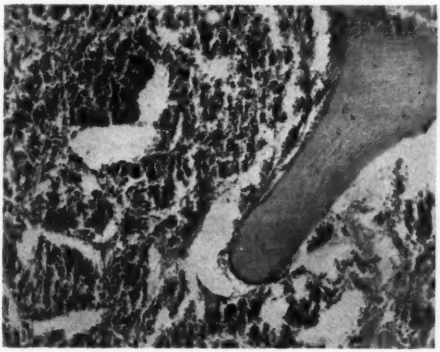

FIG. 9 (CASE 6) Metastatic carcinoma to thoracic vertebra, displaying similar small celled, undifferentiated appearance (H&E, x 100).

disruption of the basilar cell layers. They are surrounded by dense aggregates of similar dark, spindly cells. There is considerable extension of the tumor beneath the anal rectal mucosa with consequent ulceration. Considerable analplasia and mitotic activity is noted. Numerous small tumor plugs are noted within submucosal lymphatic channels. Tumor extension into the adventitial tissues is present. Lymph nodes are negative. Pathological diagnosis: Transitional cloacogenic carcinoma.

Patient readmitted on 12-2-58, because of hepatomegaly, jaundice and inguinal lymphadenopathy. His course in the hospital was downhill and he expired on 12-24-58, three weeks following admission and approximately four months following excision of the anorectal carcinoma. Autopsy revealed extensive metastatic disease involving pelvic tissues, inguinal lymph nodes, liver, lungs and vertebrae. The metastatic lesions were histologically similar to the primary lesion located at the anorectal junction.

● *Case 7.* This 78-year-old white female was admitted to the hospital on 8-10-58 because of rectal bleeding which had begun one month prior to admission. Difficult bowel movements six months prior to admission. Long history of hemorrhoids. Seven years prior to admission patient had had rectal bleeding. She was told at that time, following biopsy, that she had "rectal cancer" and was given x-ray therapy. The tumor "cleared up." Examination on present admission revealed a tumor mass on the anterior wall extending proximally and distally from the pectinate line. Patient was considered a poor operative risk because of cardiovascular disease. On 8-13-58, a sigmoid loop colostomy was performed and three weeks later perineal excision of the anorectal tumor.

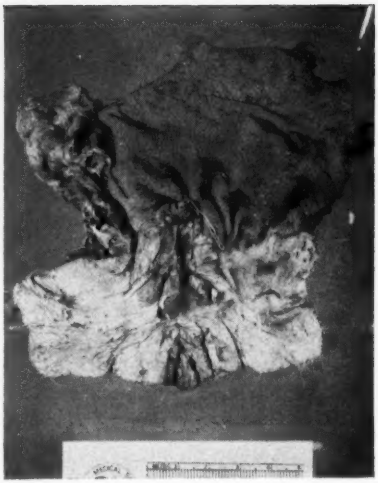

FIG. 10 (CASE 7) Characteristic location of transitional cloacogenic carcinoma at level of anorectal junction, with proximal and distal extension of tumor to rectum and anal canal.

The pathological specimen consisted of a length of anus and terminal rectum measuring 12.5 cms. in length. Extending proximally and distally from the level of the dentate line was a cauliflower-like tumor mass measuring 3.5 x 2.5 cms. in greatest dimensions. The tumor appeared to take origin from three anal tags. The edges were raised and scalloped and there was a central, shallow ulceration measuring 0.7 cms. in diameter. The tumor appeared grayish and granular. Seven lymph nodes were found in the adventitial tissues. Microscopic examination reveals a relatively superficial tumor, extending downwards as far as the inner muscular layer. The cloacogenic zone, character-

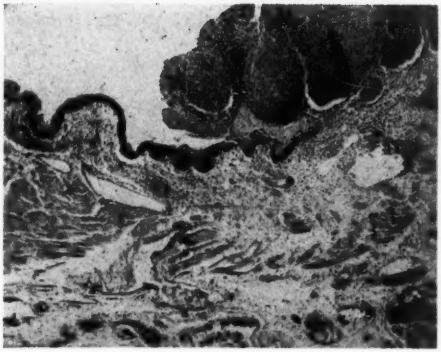

FIG. 11 (CASE 7) Section reveals anal squamous mucosa at left and abrupt transition to scalloped membranous mucosa. Origin of the tumor from the membranous mucosa is evident (H&E, x 35).

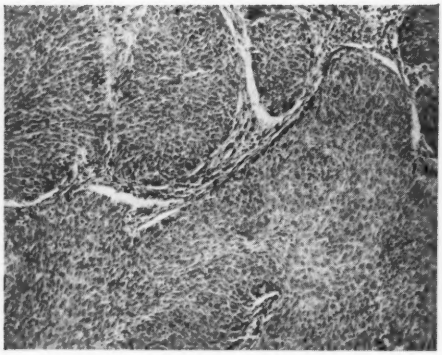

FIG. 12 (CASE 7) Higher magnification of lesion above, revealing nests of closely packed cells, displaying peripheral palisading. Keratinization is not present (H&E, x 430).

ized by a small area of delicately scalloped transitional cell epithelium, is noted in some sections and the tumor clearly originates from this transitional cell mucosa. The tumor assumes an almost verruciform pattern superficially. Deeper it is characterized by broad nests and occasionally festoon-like areas of large, ovoid and elongated pale cells with oval, vesicular nuclei. Peripheral palisading of nuclei is noted. The cells are generally uniform in size and there is moderate mitotic activity. Submucosal extension beneath anal and rectal mucosa is noted. Keratinization is absent. Lymph nodes are negative. Pathological diagnosis: Transitional cloacogenic carcinoma.

Patient living and without clinical evidence of recurrent or metastatic disease at present (six months postoperative).

● *Case 8.* This 51-year-old white female was admitted to the hospital on 10-15-58 because of a tumor located above the anal outlet. Patient had "awareness of something going on in rectum." Slight constipation, pain and bloody streaking in stools, beginning approximately one month prior to admission. Examination revealed an ulcer crater measuring 1.5 cms. in diameter on right lateral wall of anal canal just above the anal outlet. This was biopsied and reported as transitional cloacogenic carcinoma. On 10-23-58 and 10-26-58, an abdominal-perineal resection was carried out in two stages, because of severe bleeding following the initial procedure. No evidence of metastatic disease on exploration.

The biopsy specimen consisted of an irregular mass of tissue measuring 2.6 x 1.8 cms. There was a large central crater which measures 1.4 cms. in diameter with raised, tannish-gray, rolled edges. The crater base was ragged and granular. The abdominal-perineal specimen revealed the biopsy site which measures 3 cms. in diameter, and extended distally from the level of the pectinate line. Microscopic examination did not reveal any residual tumor and all dissected lymph nodes were negative.

Microscopic examination of the biopsy specimen reveals a relatively discrete tumor nodule, extending deep into the submocosa and situated between rectal and anal mucosa. The surface of the lesion is ulcerated. The tumor consists of compact nests of large, polygonal and ovoid cells with round vesicular nuclei. Palisading of nuclei at the periphery of the nests is noted. At the edge of the tumor, the nests appear less compact and the cells appear smaller and hyperchromatic. Mitotic activity is minimal.

Patient living without clinical evidence of recurrent or metastatic disease at present (four months postoperative).

● *Case 9.* This 53-year-old white female was admitted to the hospital on 11-9-58 for treatment of an anorectal carcinoma (diagnosis by biopsy ten days previously). Patient has noted dark clotted blood in stools intermittently for eight months and had had sharp pains during bowel movements in this period. These symptoms were attributed to hemorrhoids. Patient had been unusually constipated for several months.

On 11-13-58, an abdominal-perineal resection was performed. At operation, the liver appeared normal and no masses were found along the great vessels. Well below the peritoneal fold, a hard, rounded mass was felt which measured approximately 6 cms. in diameter. Operation considered in nature of palliation because of considerable extension of tumor outside bowel, particularly on the right.

The pathological specimen consisted of a length of anus, rectum, and sigmoid colon. Located at the dentate line, was a wedge-shaped, grayish tumor mass, which extended proximally for a distance of 7.2 cms. The tumor displayed irregular, shallow ulcerations and on

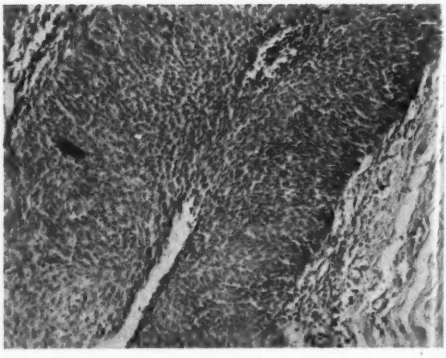

FIG. 13 (CASE 9) Section of tumor at cloacogenic zone, demonstrating orderly arrangement of cells with oval, vesicular nuclei. Keratinization is absent. "Transitional" pattern is evident (H&E, x 100).

section appeared to extend through the entire thickness of the bowel wall. A large rectal adventitial mass measuring 5 x 4 cms. was noted at a distance of 4 cms. from the anorectal junction. This mass was yellowish-gray and displayed considerable central liquefaction and debris. Twenty-four lymph nodes were found in the rectal adventitial and pericolonic tissues. Microscopic examination reveals a widely infiltrating tumor, extending through the entire thickness of the bowel wall and proximally and distally beneath the rectal and anal mucosa. The cloacogenic zone is noted in several tissues sections with evident origination of the tumor from this area. The pattern is that of broad nests of ovoid and elongated cells with hyperchromatic nuclei, arranged in palisade like fashion. Some nests assume a "basaloid" appearance, characterized by anastomosing bands of smaller, darker cells. A few foci of early keratinization are noted. Considerable central necrosis is present in larger tumor nests. The cells display slight anaplasia and there

is moderate amount of mitotic activity. Six lymph nodes contain metastatic carcinoma. Pathological diagnosis: Transitional cloacogenic carcinoma. Metastatic carcinoma in five lymph nodes opposite and one lymph node proximal to lesion.

The patient was discharged on 12-28-58. Followup reveals patient living and well (three months postoperative).

Discussion There has been a tendency in recent publications, in contrast to the older literature, to distinguish between carcinomas of the anus, anal canal and those of the anorectal junction.[1, 3, 13, 16] This appears to stem from a growing realization that a large group of carcinomas in the anal canal and anorectal junction, present unique histopathological and clinical features. This has, on the other hand, introduced into the literature a considerable number of pathological designations for these lesions, primarily of a descriptive nature. In addition there is the constant confusion and inconsistencies as regards anatomical landmarks in the anal region. We have encountered these difficulties in reviewing our files. Add to this, the small number of cases, presented in this study and a fertile medium is available for misrepresentations. Despite these problems, certain observations appear pertinent in this study and draw indirect support from many recent, excellent papers on the subject of anorectal carcinomas.

Incidence The material included in this study is from a total of 428 cases of carcinomas of the anus, anal canal, and rectum collected during the ten-year period from 1948 to 1958. A total of 33 cases of carcinoma of the anus and anal canal are included within this group, an incidence of 7.7 percent. The anal canal, in considered, in this paper, as that structure extending from the dentate line to the anal verge. Nine of the 33 cases originated at the level of the anorectal junction, or dentate line: or more specifically the cloacogenic zone terminating at this level. These cases were originally filed with the anal group of carcinomas. This group of 9 transitional cloacogenic carcinomas would then constitute an incidence of 2 percent of the total group of anal, anal canal and rectal carcinomas.

Comparable studies on the incidence of anus and anal canal carcinomas, as related to all carcinomas below the recto-sigmoid, junction, give figures ranging from 2.8 to 5.7 percent. In Bernstein's study a 2.8 percentage is given for carcinomas of the anal canal. Many other analyses are not applicable, because the author does not make clear whether the figures hinge on carcinomas located below the recto-sigmoid junction or for the entire colon. Further, it is not clear in some papers whether tumors originating at the dentate line and extending proximally are included with the anal or rectal group. We would propose that transitional cloacogenic carcinomas, by virtue of their distinctive site of origin, be placed in a separate category, desipte their almost inevitable extensions proximally and distally to the rectum and anal canal.

Transitional cloacogenic carcinomas, then, appear to represent a very small percentage of anal and rectal carcinomas. They are relatively rare tumors, probably less common than carcinomas of the anal canal and anus. Of interest in this respect is a study by Grinnell[18] of 49 cases of squamous carcinomas of the anus, 16 of which are described as having "basaloid" characteristics and

other features, which strongly suggest many of these lesions may be transitional cloacogenic carcinomas. This would constitute a ratio of approximately 2:1 between the two groups. The comparable ratio in our group would be approximately 2:5:1. It should be noted at this point that the 24 carcinomas of the anus and anal canal recovered from our files, were histologically, generally well-differentiated squamous carcinomas. A true basal cell carcinoma of the anus was not reported in our files.

A significant sex difference is suggested by the fact that 7 of the 9 patients in our study were females. Various authors[1,15,16,25] have called attention to the greater frequency of carcinomas of the anal canal, particularly near the upper limits of the canal, in females. At this location, there is a female preponderance of 8:1, in a study by Gabriel.[15] He further suggests that chronic constipation and fecal impaction in the rectum occur more commonly in women, and that the possible lodging of small fecal masses in the anal crypts and chronic irritation or trauma therefrom might be of etiological importance. Carcinomas at the anal margin appear to be more frequent in males by an almost identical ratio.

The group of nine patients ranged in age from 45 to 78, with an average age of 55.2 years. A characteristic age incidence is not suggested for transitional cloacogenic carcinomas, except that they appear to fall into the same general age categories as that of squamous carcinomas of the anal region and adenocarcinomas of the rectum.

Location Transitional cloacogenic carcinomas originate from the mucosa or accessory structures of the cloacogenic zone. Practically speaking, this would correspond to the location of this lesion just above the dentate line. Extensions of the lesion, either proximally in the direction of the rectum or distally towards the anus, or both, would be expected, even in small lesions, because of the narrow dimensions of the cloacogenic zone. This was generally true in our series of nine cases, although there appeared to be a greater tendency for spread proximally. Two qualifications on the subject of location must be inserted here. Helwig[19] has pointed out that the anal ducts may extend for considerable distances when coursing in a proximal direction and suggests that this may be of significance in explaining the origin of reported epidermoid carcinomas of the rectum.[15,25,28,30] Some 29 cases of carcinoma developing in anal fistulas have been reported.[2,12,37,38] The developmental relationship between anal fistulas and anal ducts is well known. It would therefore appear appropriate to include both of these rare varieties of carcinomas, despite their removed locations, within the transitional cloacogenic group.

The nine lesions were located as follows, by quadrant:

Anterior or antero-lateral:	6
Posterior or postero-lateral:	2
Circumferential	1

Gabriel[15] has noted a more frequent occurrence of anal carcinomas in the anterior quadrants. The significance of this location in females relates to the extension of the tumor to the posterior vagina. Morgan[33] has shown that most of the anal ducts have their orifices in the anal crypts posteriorly. This posterior location would suggest a more common occurrence of anal duct carcinomas in the posterior quadrant. The single case of anal duct carcinoma reported

in this series (Case #6) presented as a wide posterior fissure. The case reported by Close[11] presented as a left lateral nodule and one of Zimberg's[49] cases of anal duct carcinoma, was apparently almost circumferential in location. The remaining acceptable cases of anal duct carcinoma lack documentation as regards quadrant location.

Pathology *Gross:* The nine lesions recorded in this study, presented grossly in a variety of shapes and sizes. Nodular, napkin-ring, and wedge-shaped forms were noted. Ulceration, at the primary site, and at the proximal and distal extensions of the tumor appeared to be a common occurrence. The lesions were generally quite firm and the ulcerated forms contained indurated crater bases. On section, these tumors displayed grayish cut surfaces with frequent yellowish stippling, representing areas of necrosis. Thus, a characteristic gross appearance cannot be ascribed to transitional cloacogenic carcinomas.

Microscopic: Many authors[13, 15, 19, 44] have stressed the peculiarities and diversities seen in the histopathology of carcinomas located at the anorectal junction. Grinvalsky and Helwig[19] first proposed a common genesis of all these diverse histopathological varieties from the cloacogenic zone. The diversity of histological patterns is not suprising when one considers the complex nature of the membranous, cloacogenic zone. It should be noted at this point, that transitional cell mucosa may be difficult to demonstrate in routine sections from a specimen of even normal adult anorectal junction. Multiple sections directed particularly in the sinuses of Morgagni, may be required to demonstrate the transitional cell epithelium, since in the adult, the zone does not appear to be a continuous circumferential band. On the contrary, it often appears interrupted by stratified squamous mucosa joining directly with the columnar mucosa of the rectum. The cloacogenic zone is much more constant and demonstrable in the newborn.

Our series of nine cases appear to fall readily into two major categories of histological patterns, which we shall designate as:

Type A:
TRANSITIONAL EPIDERMOID

Type B:
UNDIFFERENTIATED SMALL CELL

Case #6 represents Type B and the remaining 8 cases with minor variations, are representative of Type A. These two categories, in addition, represent respective development from the two major epithelial components of the cloacogenic zone: the transitional membranous mucosa (Type A) and the anal ducts (Type B).

Microscopic examination of Type A carcinoma, reveals a very cellular neoplasm, not at all unlike the transitional and mixed transitional-epidermoid carcinomas seen in the lower urinary tract. The generally large, ovoid and polygonal cells with round and oval vesicular nuclei, are arranged in broad, rounded nests, displaying frequent, central necrotic, acidophilic debris. Peripheral palisading of nuclei is prominent in many of these nests. Anastomosing bands and festoon-like patterns are also frequently evident and in the latter, the cells assume the pattern of transitional cell layering. Occasionally, anastomosing nests and bands of tumor are noted with dark, somewhat smaller cells, simulating basal cell carcinoma. Mitotic activity varies in this group of lesions,

from minimal to moderate. In general, the cells appear to be of uniform size. Minimal to moderate anaplasia is noted in Cases #2 and #5 and there appears to be a rough correlation between the degree of anaplasia and the amount of mitotic activity.

Keratinization was seen infrequently. Two of the cases displayed occasional foci of early keratinization. Keratinization, is as Helwig[19] has pointed out, not characteristic of transitional cell epithelium and that consequently, grading by the method of Broder's would hardly be applicable. We have found this to be the case in this group of lesions. Further support for this contention is obtained in various papers,[15,25] in which the majority of epidermoid or squamous carcinomas at the anorectal junction fell into Broder's grade III and grade IV categories. The clinical behavior of these lesions, did not, however, correlate well with the histological grades. These "less well-differentiated" epidermoid and squamous carcinomas, originating at the anorectal junction, appear to roughly correspond to our Type A transitional cloacogenic carcinoma. Similarly, the variants described by Grinnell[18] as "basaloid" and by Wittoesch[48] as "basaloid squamous," represent probably Type A category in many cases. Finally, some cases reported as basal cell carcinomas of the anus[1,9,29,31] may well fall into the same category. This is not to infer that true basal cell carcinomas of the anal region do not exist. On the contrary, well substantiated cases have been reported in literature.[7,14,21,32,35] Bunstock[7] in a review of the literature, cited 47 cases reported to date. Some of these however do not appear to be true basal cell carcinomas. The true basal cell carcinoma is usually located at or near the anal verge, behaves clinically and appears histologically identical to basal cell carcinomas located elsewhere on the cutaneous surface of the body.

Not all epidermoid carcinomas located at the anorectal junction are transitional cloacogenic carcinomas. It has already been pointed out that the cloacogenic mucosa is interrupted in varying degree by extensions of stratified squamous mucosa from the anal canal. Development of carcinoma from these foci is certainly conceivable. Diagnosis, then, would rest on histological examination, familiarity with the histological variations of transitional cloacogenic carcinoma and in doubtful cases demonstration of development of the carcinomas from the membranous mucosa. This was demonstrated in three of our cases.

The anal duct carcinomas (Type B) in this series is a highly-undifferentiated, and anaplastic lesion characterized microscopically by small nests and curlicues of dark, "oat"-shaped and spindly cells. Considerable anaplasia and mitotic activity is evident. Attempts at glandular formation are suggested by occasional areas; in other sites there appears to be a fenestrated pattern. Branching anal ducts in the submucosa, surrounded by dense nests of neoplastic cells are noted in some sections. Malignant transformation of the layered cells of these ducts is evident. The cell type here appears to be derived from the basilar layers of the ductal epithelium. A mucinous component was not evident on H & E stains and a mucicarmine stain proved negative in this case as well as the previous eight in the series. Extensive cephalad and caudad spread

of this tumor is noted both by the direct route and through the submucosal lymphatic and venous channels.

Wittoesch[48] describes 7 cases of "basaloid small cell" carcinomas of the anal canal; all of which were located at the level of the dentate line. These lesions are reported as highly malignant. These appear almost certainly to be transitional cloacogenic carcinomas, probably of anal duct origin. They appear similar to the lesion (Type B) described in this series. Similarly, a reported cylindroma of the rectum[23] may very likely be an anal duct carcinoma.

Close and Schwab,[11] in an excellent paper, report a case of muco-epidermoid carcinoma originating in an anal duct. In a review of the literature, 5 additional cases are accepted by these authors as anal duct carcinomas. Three of these cases are well-differentiated adenocarcinomas[46] and two are muco-epidermoid carcinomas.[24] Cosimano[12] reports a case of mucoid carcinoma complicating a fistula-in-ano and in a review of the literature has recorded 29 cases of carcinoma complicating fistulae in ano with diverse histological patterns. Four major types are listed in 26 of these cases as follows: squamous type-8; colloid type-7; mucoid type-6 and adenocarcinoma type-5. The problem of course in carcinomas associated with fistulas-in-ano is that it remains an extremely difficult problem to prove the fistula antedated the carcinoma.[2, 27, 38] Skir[37] proposed a time limit of ten years for a persistent fistula prior to the development of the carcinoma.

Many cases of epidermoid carcinoma[10, 17, 26, 28, 30, 42] and adeno-acanthoma[41] of the rectum, described in the literature, arising independently of the anorectal junction, may well represent transitional cloacogenic carcinomas of anal duct origin. Their origin, as noted previously, could be explained on the basis of cephalad course of anal ducts under the rectal mucosa.

The extraordinary diversity of histological patterns seen in carcinomas derived from the anal ducts (and fistula-in-ano) is not suprising in view of the normal histology of the anal ducts. The presence of transitional cell and stratified columnar epithelium and varying numbers of mucin producing cells lining these ducts, is, we believe, adequate in explaining the variations in histological patterns noted above.

Transitional cloacogenic carcinomas as a group, therefore, include widely diverse histopathological forms. From the point of view of systematic pathology, these lesions might be considered as falling into two major groups, on a developmental basis: 1. of membranous mucosal origin 2. of anal duct origin. The question of prognosis will be considered below. The third epithelial component of the cloacogenic zone, the aberrant glands, have thus far not been mentioned. To our knowledge a malignant neoplasm purportedly derived from these structures has not been described in the literature.

Extension and metastasis: Extension of carcinomas at the anorectal junction proceeds in three different directions: downward, upward and laterally. Lateral extension is explained on the basis of lateral exit of the venous and lymphatic drainage in this area. Lateral extension appears generally to take place only after lymphatic drainage upward has been blocked. Lateral extension is of course significant in re-

spect to tumor deposits in the levator ani muscles. We were particularly impressed with common occurrence of lateral extension in our series of lesions, even in some of the smaller tumors. Particularly striking in several cases, was microscopic evidence of extensive spread of carcinoma via submucosal and adventitial lymphatic and venous channels.

The lymphatic drainage in the area of the columns of Morgagni is poor, while the rectal and anal drainages are purportedly excellent. In view of the rapid cephalad and caudad extension of some of the carcinomas noted in this study, the possibility of anatomoses between the rectal and anal plexuses must be considered.

It should be stressed, that transitional cloacogenic carcinomas, because of their unique location at the anorectal junction, are subject almost simultaneously, to lymphatic drainage towards the superficial group of inguinal nodes and the pelvic group (hypogastric, perirectal, iliac and peri-aortic) of lymph nodes. In Stearns'[40] series of 74 cases of epidermoid carcinoma of the anal region, metastatic carcinoma was found in the superior inguinal nodes in 46% of the cases and in the pelvic nodes in 47% of the cases. Pelvic nodes were involved by metastatic carcinoma, 55% and inguinal nodes 44%, of the time in our series of cases. Lymphatic drainage to the mesenteric and portal lymph nodes proceeds along the superior rectal efferents and appears to be a less frequent site of involvement in the early stages.

In the two cases that were autopsied in this series distant metastatic disease was found in the liver, lungs and vertebrae.

Clinical Symptoms and Diagnosis The average duration of symptoms in this group of cases was approximately 5 months. A characteristic symptom complex was not found. The patients generally presented with histories of rectal bleeding or streaking, local pain and varying degrees of constipation. This trias of symptoms is of course found with many benign and malignant lesions of the anal and rectal areas. Slaughter[38] has suggested that the triad of bloody mucoid discharge, painful defecation and excessive induration associated with chronic fistula is suspect as carcinoma.

We would suggest that the presence of any nodule, indurated fissure or chronic ulcer at the level of the dentate line, whether accompanied by symptoms or not, is suspect for transitional cloacogenic carcinoma and should of course be biopsied. Diagnosis rests on tissue diagnosis. The pathologist must be aware of the normal appearance of the cloacogenic zone and of the variations in carcinomas derived from this area. The diagnosis of basal cell carcinoma in such a lesion, followed by conservative therapy could have dire consequences.

Treatment The surgical principles for the treatment of anorectal carcinoma have been well established. It remains for this observer to stress the necessity for wide and adequate surgery, in transitional cloacogenic carcinomas. The considerable lateral extension, invasion of the posterior vagina in females and prostatic capsule in males and the often simultaneous lymphatic dissemination to the pelvic, mesenteric and superior inguinal lymph nodes seen in multiple cases in this series, strongly suggests that only a

radical approach would be of benefit to the patient. We would therefore concur with the principles enunciated by Buxton[8] as follows: 1. Radical resection of anus, rectum and sigmoid with extensive resection of peri-anal skin, levator and muscles and pelvic fascia. 2. Wide resection of posterior vaginal wall in females. 3. Bilateral inguinal node dissection in absence of clinical involvement 10-14 days later and; 4 Radical resection of inguinal, femoral and iliac nodes when involvement is apparent. Stearns[39,40] has questioned the advisability of inguinal node dissections in uninvolved cases, for two reasons. He does not note any improvement in survival rates with this procedure and stresses the high morbidity associated with radical inguinal dissections. He recommends observation, in a sense permitting the superficial inguinal nodes to act as a filter for lymphatic dissemination in this direction, followed by unilateral groin dissection when there is apparent clinical involvement. Deep pelvic node involvement does not indicate that the lesion is inoperable. In Cases 1 and 5 in this serices, despite posterior vaginal and pelvic node involvement, extensive procedures were carried out, with resultant 30- and 33-month postop survival periods. One perineal excision was carried out in this series on a relatively early superficial tumor, in an elderly female, regarded as a poor risk for an extensive procedure. The patient continues to be clinically free of recurrent or metastatic disease, six months post-op. One 4½-year cure was obtained (Case #6) in this series. Little information was gained on the subject of radiation therapy in this study. It was used postoperatively in several cases, however insufficient information is available for comment. Grinnell's[18] study indirectly suggests that radiation therapy would be of little value in the treatment of transitional cloacogenic carcinomas.

Prognosis The difficulties with such a small series of cases become most apparent when the subject of prognosis is approached. These observations are made with considerable reservation. Cases 7, 8 and 9 are of too recent date, to be seriously applied to the question of prognosis. When the remaining 6 cases are utilized, an average postoperative survival time of 25 months is obtained. It should be noted that Case #3 lacks further followup, 17 months postoperatively. The poorest survival times in this series are in the two male patients. Buckwalter's[5] comments in this respect are of interest. He describes two types of malignant lesions in the anorectal area: one predominates in males, has a benign precursor, and is more lethal; the second, without a benign precursor appears to have a less lethal course. Case #6 in this series represents an unusually malignant course. Comparison of descriptions of the abdominal situs at operation with those at the postmortem table would indicate unusually rapid growth and dissemination. Case #6 is the "undifferentiated small cell" carcinoma derived from the anal ducts. Wittoesch's[48] highly-malignant group of "basaloid small cell" carcinomas, further tends to support the lethality of this type of transitional cloacogenic carcinoma. No definite statements can be made regarding the prognosis in the more differentiated group of anal duct carcinomas since the number of lesions described in the literature thus far, are much too small.[11]

The transitional cloacogenic carcinomas derived from the cloacogenic zone appear to occur more frequently than the anal duct group and to offer a somewhat more favorable prognosis than the variety of anal duct carcinoma presented in this series. When the average postoperative survival time of the five mucosal carcinomas is calculated, we obtain a figure of approximately 30 months. The Broder's system of grading on the basis of keratinization, is not applicable in this group as noted previously. Correlation between a system of grading based on cytological criteria, i.e., anaplasia, mitotic activity, etc., and prognosis does not appear significantly useful. The number of cases is admittedly small for a definite judgment. Better correlation is suggested when Duke's method of classification is applied, although again the paucity of cases precludes any definitive statements. There appears to be no relationship between the size of the primary lesion and the degree of metastatic spread.

Transitional cloacogenic carcinomas as a group appear to offer a poorer prognosis than adenocarcinomas of the rectum. They would appear to be prognostically comparable to squamous carcinomas of the anus. This series suggests than transitional cloacogenic carcinomas may represent an even more serious prognosis than squamous carcinomas of the anus. Definitive statements await much more extensive studies.

The common association of benign anorectal disease with carcinoma has been amply stressed in the literature.[5, 15, 38] This series of cases would tend to confirm these observations. The concept of intraepidermal carcinoma of the anal region,[20] recently advanced, poses future possibilities for earlier diagnosis and treatment.

Conclusions

1. Transitional cloacogenic carcinomas are malignant neoplasms originating at the level of the anorectal junction, from the epithelial components of the mebranous cloacogenic zone. They appear to fall into two major developmental groups: those derived from the mucosa of this zone and those derived from the anal ducts. The former group appears to be more common. Carcinomas associated with fistula-in-ano are included within the anal duct group.

2. A characteristic gross appearance or clinical symptomatology cannot be ascribed to them. The duration of symptoms in these lesions appear to be short. They are characterized histopathologically by wide variations in histological patterns, which is attributed to the complex nature of the cloacogenic zone.

3. The incidence of these lesions is considerably less than that of adenocarcinoma of the rectum and probably less than squamous carcinomas of anus and anal canal.

4. The "undifferentiated small cell" types of transitional cloacogenic carcinoma, which originate from the anal ducts, is a highly malignant lesion, characterized by rapid growth and dissemination.

5. Early diagnosis followed by a radical surgical approach appears to offer the best hope for cure in this

group of lesions.

6. A much more serious prognosis for transitional cloacogenic carcinomas as a group when compared to adenocarcinoma of the rectum is suggested by this study, and possibly a less favorable prognosis, when compared to squamous carcinomas of the anus. Much more extensive studies, however, are required, before definite statements can be made.

7. Duke's system of classification of bowel carcinomas, appears to offer the most useful method of correlation with prognosis, is suggested by this small series.

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GIVE TO **HELP**

LAUNCH HOPE

An Adjuvant in Coccygodynia

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It is well known that sudden trauma such as a fall or a blow is often an etiologic factor in coccygodynia. Patients often deny this occurrence in the history and state that pain begins after long periods of sitting. Thus, repeated "small traumata" appears to be a frequent, etiologic or precipitating factor.

It is in these cases that the therapeutic adjuvant to be described has been found most effective. Of course, other etiology should be sought and, if found, treated, including fracture, arthritis, ligamentous tears, local rectal or perirectal pathology, neuritis and infection.

In addition to other therapy, it has been found helpful to apply a cushion of several thicknesses of adhesive foam-rubber moleskin in the shape of a wide U, around the coccyx and part of the sacrum thus distributing away from the sensitive area the pressure due to sitting. This is most effective as a preventive measure before the expected pain appears. The principle is that of the familiar corn-plaster. The foam-rubber moleskin is available in sheets which can be cut to the desired shape and several layers pasted together to give adequate thickness. It can be placed in position every morning, before the daily trauma of sitting begins, and kept in place by means of its adhesive surface, fortified with a strip or two of adhesive tape if necessary. It can be removed at bedtime. The curved part of the U may be placed well below the coccyx or, as some patients prefer it, reversed so as to fall high on the sacrum.

The applications are continued for a week or two and then an attempt is made to sit on a soft cushioned chair without its aid. The temporary cessation of repeated trauma permits healing in some cases of a peri-coccygeal inflammatory reaction that may be present, permits relaxation of spastic musculature and, at the least, gives the patient a relatively free period from pain.

The author has used this method in only 12 cases of coccygodynia, admittedly a small number from which to draw conclusions, but coccygodynia appears relatively infrequently in proctologic practice. Of these 12 cases, 8 showed marked improvement. These

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were all of a mild or moderate type. One case showed partial improvement, 3 no improvement. Roentgenograms were negative in all; no arthritic changes or fractures were found. Clinically, 4 of these cases showed marked angulation of the coccyx at the sacrococcygeal articulation, and some protrusion of the bony surface under a thin skin, which lacked subcutaneous fatty cushioning in that area. Because of this lack of fat, the bone seemed to be more than ordinarily exposed to trauma.

This method is an adjuvant in addition to the usual treatment with heat in various forms, salicylates where indicated, pyriformis massage, injection of procaine or long lasting anesthetics-in-oil or surgical excision of the coccyx.

Summary

An adjuvant to the therapy of coccygodynia is suggested, making use of a cut-out adhesive foam-rubber moleskin to protect the sacrococcygeal area from the multiple repeated pressure traumata produced by sitting.

198 Linden Boulevard

The Management of Constipation

The Effectiveness of a Dioctyl Sodium Sulfosuccinate-Cholic Acid Combination

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The commonly reported failure of dioctyl sodium sulfosuccinate in relieving constipation has been explained by the fact that although the preparation softens the stool, it often fails to stimulate peristalsis sufficient for evacuation. A simple solution to this problem would seem to lie in a combination of dioctyl sodium sulfosuccinate with an appropriate peristaltic stimulant.

This report describes clinical experiences of 60 physicians with a new softener-evacuant combination* for oral administration in the management of constipation. A total of 279 patients were involved in the trials.

Each tabule of the preparation contains:

dioctyl sodium sulfosuccinate	50 mg
cholic acid	100 mg

For trial purposes, recommended dosage was 2 tabules b. i. d. for three days, followed by maintenance therapy of 1 or 2 tabules once daily.

Physician experiences with the preparation were determined through direct interview. Medical students served as interviewers for this study, and included:

E.J.K.—Senior
Howard University School of Medicine
D.Y.L.—Junior
Chicago Medical School
H.S.—Junior
Medical College of Georgia
R.C.S.—Sophomore
University of Buffalo School of Medicine
R.W.J.—Senior
College of Medical Evangelists
J.L.G.—Sophomore
Creighton University School of Medicine
B.L.W.—Sophomore
Baylor University College of Medicine
J.S.—Sophomore
Chicago Medical School

Dr. Chyatte is Associate Professor of Psychology, De Paul University.

Conducted under a grant from Irwin, Neisler & Co., Decatur, Illinois.

* Aquatyl®, Irwin, Neisler & Co.

	OB-GYN	G.P.	INTERN	SURGEON	TOTAL
CHICAGO, ILL.	1	7	4	1	13
OMAHA, NEB.	0	1	2	1	4
LOS ANGELES, CALIF.	0	6	3	0	9
BUFFALO, N. Y.	1	4	1	0	6
AUGUSTA, GA.	3	0	5	0	8
WASHINGTON, D. C.	0	8	3	0	11
HOUSTON, TEX.	1	6	2	0	9
TOTAL	6	32	20	2	60

Physicians participating in the trial, their specialties and geographic locations, were as above.

The combination was judged effective in relieving constipation among 173 (62%) of the patients. Within this group were patients suffering from atonic, spastic, acute, and chronic conditions. The patients were those encountered in the course of daily office practice during the trial period. The constipation was associated with a full range of such etiological factors as pregnancy, cholecystectomy, poor bowel and dietary habits, the use of such constipating drugs as antacids and ganglionic blocking agents, and in many cases was thought to be psychological in origin.

Interview data were gathered during the month of July 1957. The evidence suggests that the effectiveness of the preparation is a direct function of the patient's age. Although many older, chronic cases responded well to therapy, the lowest percentage of favorable responses was observed among the geriatric group.

Among those patients where the dosage level used was less than that recommended, the proportion of success fell quite sharply. In addition, response was poor among the few patients whose constipation was apparently so recalcitrant, and of such long standing, that the physician felt it wise to increase the initial dose well above the recommended level.

Since the action of cholic acid as an evacuant is largely indirect, hinging on its involvement in the secretion of bile, which, in turn, stimulates peristalsis in the rectum or colon,† a time lag was to be expected between the administration of the preparation and the relief of constipation. This was clearly verified among patients who were kept on therapy for less than the recommended period of three days. The remission rate was found to increase steeply when therapy was extended beyond the first two days, and reached a maximum after about a week, rather than after the three day point. The observed drop in remission rate after nine days duration is, again, probably a function of a high incidence of resistant cases among those patients whose initial therapy was prolonged.

At any rate, it would appear that the recommended duration of initial therapy should be increased from three days to about seven.

† Best, C. H., and Taylor, N. B., The Physiological Basis of Medical Practice, 5th ed., 1950. p. 538, 543.

TABLE I EFFECTIVENESS OF AQUATYL® THERAPY AS RELATED TO AGE OF PATIENT

PATIENT'S AGE IN YEARS	NUMBER OF CASES	% OF CASES RELIEVED
under 10	3	100.0
10 - 19	5	100.0
20 - 29	16	87.5
30 - 39	44	63.6
40 - 49	51	64.7
50 - 59	87	62.1
60 - 84	73	49.3
Total	279	62.0

TABLE II EFFECTIVENESS AS RELATED TO INITIAL DOSAGE

DOSAGE IN TABULES/DAY	NUMBER OF CASES	% OF CASES RELIEVED
1 - 2	18	38.9
3 - 4*	232	64.2
5 - 6	25	68.0
7 or more	4	00.0
Total	279	62.0

* recommended dosage

TABLE III EFFECTIVENESS AS RELATED TO DURATION OF INITIAL TREATMENT

DURATION OF THERAPY IN DAYS	NUMBER OF CASES	% OF CASES RELIEVED
1 - 2	34	8.8
3* - 4	135	64.4
5 - 6	31	64.5
7 - 8	31	83.9
9 and over	48	77.1
Total	279	62.0

* recommended duration

Conclusions

1. A new stool softener-evacuant combination containing dioctyl sodium sulfosuccinate and cholic acid was found to be effective and safe therapy in treating constipation associated with a wide variety of etiologies.

2. The combination was used effectively in one hundred and seventy-three of two hundred and seventy-nine patients. No side effects were encounterd.

3. Remission rate was highest among younger and middle-aged patients, and lowest among geriatric cases.

4. Optimal initial dosage appears to be between three and six tabules per day.

5. Optimal duration of initial therapy was found to be approximately one week, with an extreme drop in remission rate when duration of therapy was less than three days.

6. The combination seems to be indicated as conservative beginning drug therapy in most types of constipation encountered in daily office practice.

Cholic acid represents a relatively natural means of stimulating peristalsis through the biliary system provides the same level of patient safety as does dioctyl sodium sulfosuccinate alone, and yet yields a high proportion of success.

25 East Jackson Boulevard

Rectal Prolapse in Psychiatric Patients

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Procidentia of the rectum is an uncommon enough condition in the general population to make it difficult for many surgeons to gain a vast experience in its treatment. Complete agreement regarding therapy is also widely diversified.

Prolapse is an all-inclusive term and denotes protrusion of the rectum from its normal position and may be divided into prolapse of the rectal mucosa which is a specific entity not to be considered here and prolapse of the rectum or procidentia. Prolapse of the rectum involves all coats of the rectum and may be divided into concealed and visible. Each of these may be further divided into first and second degree.[8] Thus, in first degree concealed prolapse, all coats descend and none are visible while in second degree concealed prolapse, all coats descend and only the rectal mucosa is visible. In first degree visible prolapse, all coats descend and are visible but the cul-de-sac does not pass beyond the anal sphincter, while in second degree visible prolapse, all coats descend and are visible and the cul-de-sac does pass beyond the anal sphincter.

There are various theories to explain the formation of a procidentia but that of Moschowitz is the most commonly accepted.[7] He feels that procidentia is actually a sliding hernia with the pouch of Douglas being the hernial sac, and the defect of the transversalis fascia being the second component. The principal anatomic components leading to procidentia include laxity of the cul-de-sac, abnormally long rectosigmoid colon, weakness in the lateral rectal pedicles and dilatation of the anal sphincter.

The numerous operative procedures that have envolved is an indication of the poor results obtained and the failure to cure all cases with any one procedure. The procedures may be grouped generally into suspensions, hernioplasties and resections. They have been performed abdominally, perineally and in combination.

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Dunphy,[4] in 1948, outlined what was considered to be a satisfactory approach to the surgical treatment of rectal procidentia. This consists of perineal resection of the rectum with closure of the sliding peritoneal hernia and repair of the attenuated levator ani muscles to be followed by abdominal fixation of the remaining rectosigmoid and obliteration of the cul-de-sac. This procedure has been employed in all of our surgically-treated cases with encouraging results. A similar perineal procedure, with a few modifications, has been advocated by Altemeier et. al.[1]

Case Reports: CASE I. R.H., #31910, a 27-year-old, blind, mental defective female was admitted on 10/2/51 with pulmonary tuberculosis, status epilepticus and known to have a second degree visable rectal prolapse of eight months duration. A modified Swenson abdomino-perineal resection was performed and 17 cm. of rectum was resected on 1/29/52. Pathologic report of the resected bowel was negative. The prolapse recurred several months after surgery and reduction could not be maintained. On 11/10/52, a first and second stage combined Dunphy procedure was performed and an additional 12 cm. of colon was removed. Pathologically, the resected bowel showed congestion and edema of the mucosa. There was no evidence of recurrence for sixteen months postoperatively, with continence and daily bowel habits. She expired after a pneumonectomy on 3/16/54.

CASE II. O.W., an 82-year-old, bedridden, white, senile, psychotic male was known to have prolapse of the rectum for thirteen years with a recent history of bleeding per rectum. Reduction of the prolapse was earlier done manually but recurrence was the rule. His hemoglobin on admission was 9.5 gm. On 8/15/52, a first stage Dunphy procedure was performed with 17 cm. of rectum and sigmoid removed. The resected rectum revealed congestion and edema of the mucosa. The second stage was never performed, he remained continent of stool and there was no evidence of recurrence for four months, until his death from congestive failure on 12/14/52.

CASE III. H.I., a 30-year-old white female schizophrenic was admitted on 11/5/51 because of complete rectal prolapse. The prolapse could be reduced manually but recurred. Its duration prior to admission is not known. On 12/3/51, a first stage Dunphy procedure was performed and 8 cm. of rectum was resected. The second stage was never performed and there was no evidence of recurrence or incontinence for seven years, until the time of her death from a pulmonary embolism on 2/1/58. The pathologic report of the resected colon revealed only congestion and edema of the mucosa.

CASE IV. I.H. #8830, a 70-year-old, white male schizophrenic was admitted on 1/20/54 with a six-year history of complete rectal prolapse. On 2/5/54 a first stage Dunphy procedure was performed and 9 cm. of rectum was resected. On 3/24/54 a second stage Dunphy procedure was performed. The prolapse recurred and on 5/25/54 a proctoplasty with resection of an additional 7 cm. was performed. The pathologic report revealed congestion and edema of the mucosa with an adenomatous polyp. This too, failed to control the procidentia and he continued to be symptomatic, requiring almost constant digital pressure to main-

tain reduction until his death on 12/27/56, from an unrelated cause.

CASE V. G. K., a 28-year-old white female schizophrenic with a history of hemorrhoids, was admitted on 5/31/56, because of a large rectal prolapse. On 6/29/56 a first stage Dunphy procedure was performed and 10 cm. of rectum was resected. On 8/14/56 a second stage Dunphy procedure was carried out. There has been no evidence of recurrence for three years and when last seen was continent of stool. The patholical report was negative except for congestion and edema of the mucosa.

CASE VI. H.S., a 35-year-old white male schizophrenic was admitted on 1/16/58 with a history of bleeding per rectum and procidentia. Hemoglobin on admission was 8.5 gm.%. After adequate preoperative tranfusions of whole blood on 2/6/58 a first stage Dunphy procedure was performed with 9 cm. of rectum resected. On 3/21/58 a second stage Dunphy procedure was performed. When last seen eighteen months postoperative, he was free of prolapse and has been continent of stool since his operation. The resected bowel showed edema, congestion and thicking of the mucosa.

CASE VII. M.H., a 36-year-old white female schizophrenic was admitted on 4/28/58 with a six-month history of rectal prolapse with bleeding. Hemoglobin on admission was 12.8 gm.%, and on 5/6/58 a first stage Dunphy procedure was performed with 10 cm. of rectum resected. A second stage Dunphy procedure was performed on 6/5/58. When last examined one year postoperative there has been no evidence of recurrence or incontinence of stool.

Comments:

In a seven-year period, seven patients have been treated for procidentia of the rectum. The incidence of procidentia has been thought to be high among psychiatric patients because of several factors.[3, 5, 6] These include poor toilet habits, tendency for fecal impaction and constipation, high roughage content of the diet and concomitant neurogenic defects. Our incidence has been one per 731 hospital admissions. This may not be true indication of its incidence at this institution since it is well known that the prolapse may occur only occasionally and spontaneously reduce itself and the psychotic patient may never complain of it.

In addition to the cardinal symptoms of crescentrically arranged folds of rectal mucosa, generally more than five cm. in length occurring typically at the time of stool there has been noted other interesting findings which should be mentioned. Two patients presented with severe anemia secondary to severe bleeding from the procidentia which required several transfusions preoperatively. This has been thought to be uncommon.[6] Local trauma to the rectal mucosa from digital manipulation resulted in bleeding and has been commonly seen in the psychotics and has necessitated the use of restraints. In one patient with a long-standing procidentia in which reduction could not be maintained, the prolapse rectum could be maintained only by constant digital pressure. One patient has been seen who was able to reduce the procidentia merely by increasing negative intra-abdominal pressure. Fecal incontinence was universal in all of the patients seen preoperatively.

The ages ranged from 27 to 82 years

with an average age of 47 years. There were three males and four females. Procidentia is considered to be more common in the females than in the male.[2, 3, 6] Associated rectal pathology has not been observed except for one case where the resected specimen contained an adenomatous polyp.

Of the seven patients treated all were treated by definitive surgery. All seven were operated according to the method of Dunphy, five having both a first and second stage and two having a first stage only. One patient had a Dunphy procedure performed after a modified Swenson pull-through procedure which failed. There was one failure following the Dunphy procedure which also failed following a repeat proctoplasty. The remaining six patients maintained a normal anorectal canal without evidence of recurrence, up to seven years, and all have been continent of stool and without evidence of stricture. There were no operative deaths or serious post-operative complications.

Summary

The histories of seven patients treated for rectal prolapse have been presented. All were treated for rectal prolapse by a Dunphy procedure and in six of these, the end result has been excellent over a follow-up period from four months to seven years. There was one failure.

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Veterans Administration Hospital

Benign Tumors of the Colon and Rectum

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Benign tumors occurring in the colon and rectum beyond the reach of the sigmoidoscope are almost always misdiagnosed prior to surgery. This occurs because the symptomatology of benign and malignant tumors is similar and also because the relative infrequency of benign lesions prevents their being included in differential diagnosis. Embryologically, almost any mesenchymal tumor occurring anywhere in the body may occur also in the colon and there are scattered reports in the literature of hemangiomata, leiomyomas argentaffinomas, lymphangiomas, lipomas, neurofibromas, endometriomas and adenomas. Of these, by far the largest numbers are adenomas and they will not be included in this discussion since there is little to add. The occurrence of endometriomas is mentioned only for the sake of completeness, since they are usually present by contiguity or inclusion, rather than as constituent cells of the colon.

In 1,460 consecutive autopsies, Helwig found 154 benign tumors of which 139 were adenomas.[2] Lipomas are the second most common type of benign tumor. There were 13 lipomas in Helwig's 154 cases. In reviewing 5, 734 autopsies, Kirshbaum[3] found only two benign mesenchymal tumors of the colon; both of these were lipomas.

Spindle cell tumors appear to be the rarest benign lesions of the colon. Palazzo and Schultz[4] reported that in 140 cases of spindle cell tumors of the G.I. tract, only 12 were found in the colon and of these 12, only one was benign. There was one leiomyoma in Helwig's 154 benign tumors. One of the cases being reported here is a leiomyoma; the other case is a lymphatic cyst.

Eleven cases of lymphatic cyst were found in the English literature[9] and only five of these occurred in the colon. The rarity of both types of tumor being reported is well illustrated by the above figures.

Report of Cases CASE NO. 1: A 49-year-old obese white female presented herself with a chief complaint of crampy, lower abdominal pain, particularly on the left side. This was associated with some constipation and had been accompanied on isolated occasions with the passage of blood. She was prepared and sigmoidoscoped. There were hemorrhoids present, but none showed evidence of ulceration or recent bleeding. The examination was otherwise negative except for the presence of one

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drop of blood seen coming down from above. The patient was referred for x-ray examination of the colon and a polypoid filling defect was visualized in the sigmoid. Since retained fecal material is difficult to differentiate, the examination was repeated. It seems advisable, in our experience, to demonstrate the same filling defect in the same location on at least two occasions before surgery is advised. At the second examination, a double contrast study was requested and the defect could not be seen in the air filled colon, although it was present in the barium study. A third examination was therefore carried out and the same series of events occurred. Therefore, this was interpreted as an extramucosal, compressible tumor, probably not a polyp.

The patient was prepared for surgery in the usual manner and exploration was carried out through a lower mid-line incision. Since the patient was obese, the colon was covered by thickened, pendulous epiploica and the mesentery was short and thick. In the mid-sigmoid, on the antimesenteric border, a soft, compressible, but non-pedunculated tumor was palpated. Therefore, a colostomy was done and the tumor presented as an intramural mass, pressing tightly against the mucosa, but without visible evidence of ulceration. The mucosa was incised and a thin-walled, multiloculated cyst was found arising in the submucosa, but extending into the muscularis. It could not be enucleated, but was excised, without rupturing the cyst. The defect in the bowel wall was repaired and closed with two layers. Convalescence was uneventful and the patient has remained symptom free. Pathological report was lymphatic cyst of the colon, benign.

CASE No. 2: In October 1956, a 25-year-old thin, white female was seen in the office with a chief complaint of moveable, palpable mass in the left lower quadrant. The mass had been discovered by the patient three months before examination because of slight soreness in the region. She consulted a local physician and was advised that the mass was not important since it was asymptomatic. Since that time, the mass had increased slightly in size and she consulted another physician who referred her for a surgical opinion. There had been no change in bowel habit, no symptoms of obstruction and no blood in the stools.

On abdominal examination, a firm, freely moveable mass approximately five inches in diameter was both visible and palpable in the left iliac fossa. The mass could be moved into the left upper quadrant and across the mid-line. It could also be felt in the left fornix on pelvic examination. The rectal examination was negative.

In view of the patient's age, the mobility of the tumor and the easy access ability on pelvic examination, a diagnosis of pedunculated ovarian cyst was made and surgery was advised. The abdomen was opened through a lower mid-line incision. In the lower descending colon, just above the sigmoid, there was a large tan, solid tumor which appeared to arise in the wall of the colon and which extended out into the mesentery. The tumor measured 15 cms. and the colon was stretched tightly over its surface. Tortuous distended vessels coursed over it and the left ureter was stretched across it. A diagnosis of leiomyosarcoma was made grossly. The ureter was freed and a partial descending colectomy with excision of the involved mesentery was carried out. There

were no mesenteric nodes visible or palpable. Bowel continuity was re-established by end-to-end anastomosis. Convalescence was without incident and the patient was discharged on the eighth postoperative day.

On pathological examination, the tumor was composed of spindle cells tightly packed in an orderly arrangement with collagen interspersed between the fibrils. Special stains were carried out to differentiate it from a fibroma. There were no mitotic figures. The tumor arose between muscle cells and did not involve or erode the mucosa. It was therefore reported as a benign leiomyoma of the colon.

Aids to Diagnosis Whether benign or malignant, survey is almost always necessary for colonic tumors because of the pain, obstruction and bleeding that result from these space-occupying lesions. The chief value, therefore, in the diagnosis of benignancy before exploration lies in planning a simpler, more limited type of operation than would be done for malignancy. Enucleation, excision or simple transcolonic ligation of a stalk may be all that is necessary, rather than extensive resection.

Several points may assist in distinguishing benign from malignant lesions.[13] The duration of symptoms in benign colonic tumors varies from 41.5 months to fifteen years, as against six to twelve months for carcinoma. Weight loss is infrequent in benign lesions while pain and intussusception are more common due to the frequent occurrence of benign tumors on long stalks. Mucosal ulceration occurs later in benign lesions so that anemia is less frequent although melena may be one of the presenting complaints.

The position of most benign tumors in the anatomic layers of the bowel is different from carcinomas. Many benign lesions, indeed most, in their inception, are intramural extramucosal tumors. This fact can often be recognized both by proctosigmoidoscopy and by barium enema and should be one of the main reasons for suspecting benignancy. While they produce a projection on a roentgenogram, benign tumors rarely constrict or encircle the lumen of the bowel. The density of certain tumors such as lipomas can be distinguished by double contrast studies, since they may appear more radiolucent than the surrounding air-filled colon. Compressibility on spot films, particularly in the case of lipomas or lymphatic cysts, may help to diagnose a benign tumor. In our case, however, the disappearance of the cyst when the colon was filled with air, necessitated three barium enemas before it was recognized that the lesion was indeed present, but collapsed when compressed. Radiologically, the presence of a hemangioma should be suspected if a cluster or circle of phleboliths is seen in conjunction with the defect in the colon.[17] Neurofibroma may be suspected in the presence of disseminated neurofibromatosis or Von Recklinghausen's disease.[16]

Intussusception is so frequent with lipomas of the colon, varying from 30% to 50%[11, 12] that the diagnosis of lipoma should certainly be considered in all cases of intussusception. There have been eleven cases reported[13] where the lipoma was passed spontaneously and others where it was extruded, thus simplifying the diagnosis.

In our case of leiomyoma of the colon, palpable tumor was the only finding and the only complaint. The lym-

phatic cyst, however, had produced crampy, episodic pain and several episodes of melena.

Discussion Due to the rarity of occurrence of both lymphatic cysts and leiomyomas of the colon, there is no large experience available for charting the expected course of these tumors. Beahrs mentions only that they occur. Their origin is obscure and their evolution a matter for speculation.

In the case of lymphatic cysts, they may be classified[10] as 1. Embryonic and developmental. 2. Traumatic or acquired in which there is injury with resulting hemorrhage or rupture of lacteals. 3. Neoplastic with true new growth of lymphoid vessels resulting in lymphangioma if benign, or lymphangioendothelioma if malignant and 4. Infective and degenerative cysts of mycotic, parasitic or tuberculous origin. Degeneration of lymph nodes might produce a lymphatic cyst belonging to this classification. They might also be classified as to site of origin. In our case, the cyst apparently arose in the intramural lymphatics since it occurred on the antimesenteric border, but in other instances they have been reported to arise in the mesentery on the mesenteric border and involve the colon secondarily.

To the clinician, the chief interest in origin, development and course lies in the outlook for the patient. Although surgical treatment is determined in each case by the size, location and appearance of the tumor, it is well to know that chylous cysts do become malignant. In a series of nine chylous cysts, reported by Beahrs, Judd and Dockerty, two were malignant, an incidence of 22%. When well encapsulated, enucleation or excision may suffice, but minimal resection is probably preferable, due to potential malignancy and also to possible weakening of the wall of the colon after enucleation.

Any opinion regarding the projected course of leiomyomata of the colon can only be based upon a knowledge and experience with them in other locations in the gastrointestinal tract. They arise as an integral part of the muscle wall of the intestine and not from any structures running to or from the colon. They undergo malignant change and cystic degeneration over a period of one to two years and metastasize by invasion of the blood stream rather than by lymphatic spread. As in the case presented here and in those encountered in the stomach and small intestine, they are bulky tumors and often produce mucosal erosion and massive hemorrhage. It is felt that leiomyoma of the colon should always be treated by wide resection, with removal of node bearing mesentery.

Summary

Although every cell type may be represented in benign tumors of the colon and rectum, only adenomatous polyps and lipomata are relatively common. Adenomas are potentially malignant and lipomas always benign. There are no reports in the literature of lipomata becoming malignant. Both adenomas and lipomata may be treated by simple enucleation or excision. In the case of adenomata however, frozen section may be advisable.

Lymphatic cysts, leiomyomata, hemangiomas, argentaffinomas and neu-

rofibromas, are potentially malignant and are best treated by resection, the extent of which must be individually determined at the time of surgery.

The occurrence of endometriomas is mentioned only for the sake of completeness since they are usually present by contiguity or inclusion, rather than as constituent cells of the colon. Benign lymphoma has been extensively discussed in the literature and we have nothing new to add.

Extensive resection with loss of function can usually be avoided if the surgeon knows the potentialities and prognosis of the presenting tumor and can thus select the best operation for maximum protection with minimum morbidity.

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Newer Developments in Proctology

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John R. Hill[4, 5] recently contributed two excellent articles on some pitfalls in anorectal surgery and the relationship of proctology to general medical problems. Every proctologist and surgeon should read these two fine articles. It will do them a world of good. In the same theme, Martin[6] has written a fine paper on "How would you examine the colon?" It contains some fine advice that has stood the test of time. Halpern and his colleagues[2, 3] have presented two fine reports emphasizing that constipation, with its attendant straining at stool, may produce fatal cardiovascular complications from mobilization of peripheral phlebothromboses with a probable consequent production of pulmonary embolism. Straining at defecation in the constipated caused far greater fluctuations in the venous pressure of the veins in the legs and pelvis (the common source of pulmonary emboli) than in nonconstipated individuals.

Grodsky[1] pointed out that severe, disabling, symptomatic hemorrhoids, that are not responsive to palliation, can be safely treated surgically during the second trimester of pregnancy. Once true hemorrhoidal disease develops, correction should be performed before a subsequent pregnancy to avoid consequent increased morbidity and aggravation. Stein[13] treated 706 patients suffering from superficial thrombophlebitis. He concluded that phenylbutazone (Butazolidin,® Geigy Pharmaceuticals) was an effective type of treatment for both superficial and deep thrombophlebitis in 95 percent of his patients. This treatment can be carried out as a routine procedure in the doctor's office, sparing the patient from excessive financial loss by being able to return to his occupation much sooner than by other methods of treatment at present. Seletz[11] pointed out that in our hectic Atomic Age, tension states and stress produce psychosomatic disorders of the anorectum, initially producing faulty behaviour, but finally causing actual disease of the anorectum. The original target zone affected by the insult of prolonged ten-

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sion is the rectosigmoid which becomes initially rigidly spastic and knotted. On palpation, the state of the caudal portion of the levator muscle is quite characteristic and pathognomonic of this condition. The pubo-rectalis is in a state of tonic rigidity. Rosenberg[10] states that postoperative anal skin tabs are the result of edema that does not promptly recede. He concludes that the local application of 2.5 percent hydrocortisone immediately after operation and continued for five days thereafter was of great aid in the prevention of such annoying complicating tabs, in 92 percent of his 86 patients so treated. This therapy was from 250 to 400 percent more successful in the prevention of these skin tabs than any other method of treatment employed.

O'Brien and Mustard[8] stated that in a series of 65 patients operated upon for diverticulitis of the sigmoid colon, only 27 patients were correctly diagnosed preoperatively. Under the most optimum of conditions, a one-stage resection may prove feasible. Usually these patients must be treated by multi-staged operations, because of complications produced by the long duration of the disease.

Trout[15] pointed out that there is only a 30 percent overall five-year survival rate in the entire group of unselected colon malignancy in this country. Early diagnosis, the responsibility of every physician, is the one area where marked improvement can be achieved. He stressed the importance of a digital rectal examination in every physical examination, because the great majority of the 46 percent of all colon and rectal cancers that do occur in the rectum, can be felt by the examining finger. Swinton and Snow[14] report their experiences with 656 patients at the Lahey Clinic, between the years of 1950 through 1953, having carcinoma of the colon, rectum or anus. 92.8 percent of the tumors were adenocarcinomas. The primary tumor was resected in 92.9 percent of patients, while palliative resection was performed in 28.8 percent. The absolute survival rate in 608 patients was 44.9 percent. The most important single factor in improving survival rates is the increase in the amount of lymphoid tissue removed with the tumor at the time of operation. High ligations of the inferior mesenteric vessels and the preliminary ligations of the blood supply to those segments of the colon to be excised should be performed whenever possible, including ligation of the main trunks of the hypogastric arteries prior to abdominoperineal resection. Stearns and his associates[12] conclude that only those patients possessing cancer of the rectum *with* lymphoid involvement really receive any appreciable benefit from preoperative Roentgen therapy (37 percent with therapy as contrasted to 23 percent without treatment, respective survival rates). Quan and his colleagues[9] found 21 (0.5 percent) malignant melanomas of the anorectum among 4,500 patients with proven malignant tumors of this area, on the rectum and colon service of the Memorial Center for Cancer and Allied Diseases, New York City In fact, English medical literature contains references to only 117 instances of this rare tumor. These authors conclude that today the treatment of choice consists in performing an abdominoperineal resection of the anorectum with or without preoperative external irradiation.

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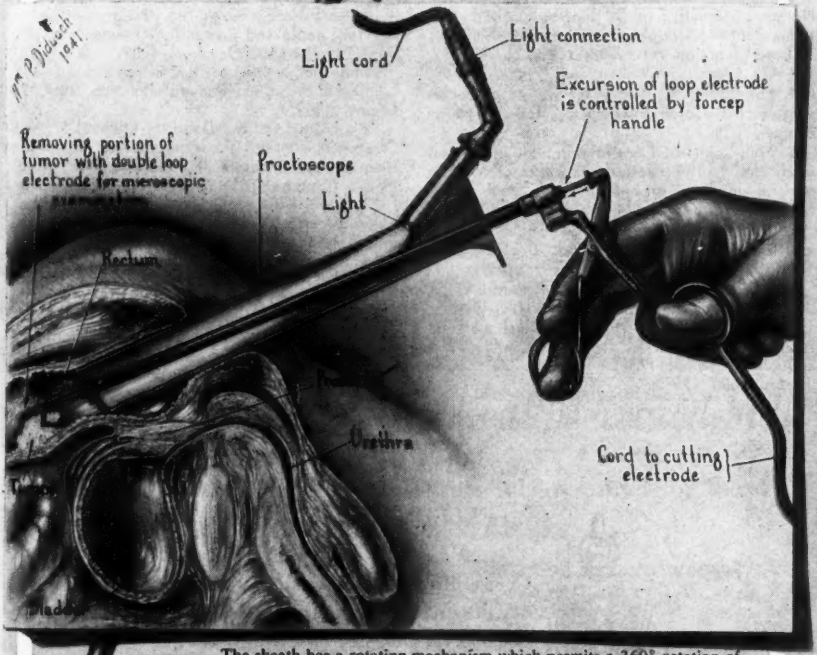

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headed by C. W. Mayo[7] on the surgical management of carcinoma of the rectum and rectosigmoidal region is a classical presentation. All coloproctologists should obtain a copy of this superlative exhibit and preserve it in their permanent file for frequent reference and study.

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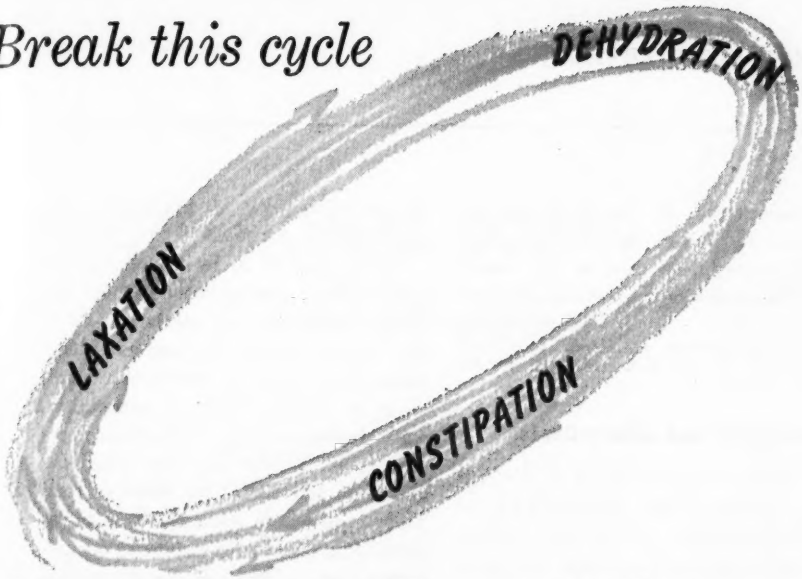

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—Concluded from page 187

the persistence of the duodenal dyskinesia and the duodeno-biliary reflux which accordingly need to be treated after the operation has been performed.

GUY ALBOT

La Semaine des Hôpitaux, n°8/2—18 Feb. 1960—pp. 469-486

Gallbladder and Biliary Ducts

Pathogenic role of duodenal dyskinesias and duodeno-biliary regurgitation in chronic disorders of the gall-bladder, the main biliary ducts and the intra-hepatic biliary ducts.

The authors have already shown elsewhere that duodenal dyskinesias with spasms of the sphincters of the duodenal ring can cause pockets whose contractions induce a duodeno-biliary regurgitation.

In the present article they recall the part played by duodenal dyskinesias and duodenal regurgitation in hepato-biliary disorders.

It is obvious when it complicates the operation of bilio-duodenal derivation and sphincterotomies; but it is more difficult to show its existence in primary hepato-biliary disorders. The authors prove this in non-lithiasic cholecystites by regurgitation during certain cases of lithiasic cholecystitis (secondary or otherwise to gastrectomy), in hepatites secondary to chronic cholecystites. They also show their importance in the genesis of chronic angiocolitic affections of a serious nature of the main bile duct which can go from hepatico-choledocitis to intra-hepatic cholangiolitis with an apparently primary biliary cirrhosis.

Seeing that it is by means of duodeno-biliary regurgitation that duodenal dyskinesia can create lesions of the biliary ducts, the authors have based their study on present-day semiology of duodeno-biliary regurgitation. This duodeno-biliary regurgitation occurs in a relatively easy way when the choldoch, whether of the short or long variety, opens out without a long intramural course into the duodenal pockets interjacent to the duodenal sphincters (bulbo-duodenal, medio-duodenal, Ochsner or tertio-duodenal); it occurs with greater difficulty in medium size choledochs whose lengthy and oblique intra-mural course ends in the Busi-Kapandji medio-duodenal sphincter zone. But in every case, three methods enable it to be found. It may be suspected after a dose of pancreatic ferments in the vesicular bile. It may be considered likely when a duodeno-pancreatic regurgitation occurs during biliary radiomanometry especially if it is at low pressure. The irrefutable proof is that of the radiomanometric syndrome of a mounting duodenal residuary.

The participation of these duodeno-biliary regurgitations explains why bacteriological studies so far have been unable to give a sufficiently clear explanation of the genesis of these diseases.

GUY ALBOT AND M. KAPANDJI

Semaine des Hôpitaux de Paris no. 5 January 18th 1960, pp. 194-210

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Carbocaine Hydrochloride, Winthrop Laboratories, New York, New York. Mepivacaine hydrochloride, a local anesthetic for infiltration and nerve blocks (major and minor surgery, therapeutic blocks); also for a caudal and peridural anesthesia. **Dose:** For nerve block, from 5 to 20 cc. of 1 or 2 percent solution, depending on the area and extent of block. For caudal and peridural block, from 15 to 30 cc. of a 1 percent solution. For infiltration, up to 40 cc. of a 1 percent solution. For therapeutic block (in management of pain), from 1 to 5 cc. of a 1 or 2 percent solution. **Sup:** 1 percent in sterile saline solution in multiple dose vials of 50 cc.; 2 percent in sterile saline solution in multiple dose vials of 50 cc.; 1 percent in sterile modified Ringer's solution in single vials of 30 cc.

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Donnagel-PG, A. H. Robins Company, Inc., Richmond, Virginia. Pale yellow, banana-flavored suspension containing in each 30 cc. 24 mg. Po. Opium USP, 6 Gm. kaolin, 142.8 mg. pectin, 0.1037 mg. hyoscyamine sulfate, 0.0194 mg. atropine sulfate, 0.0065 mg. hyoscine hydrobromide, and 16.2 mg. phenobarbital. Indicated for comprehensive symptomatic control of acute, non-specific diarrheas. **Dose:** Adults, 2 tablespoonsful every three hours; children, 2 teaspoonsful every three hours, or as directed by physician. **Sup:** Bottles of 6 oz.

Furacin-HC Cream, Eaton Laboratories Division, Norwich Pharmacal Company, Norwich, New York. Contains 0.2% nitrofurazone and 1.0% hydrocortisone acetate in a vanishing cream base. Indicated for the control of inflammation, erythema, local edema and pruritus in such cases as pyodermas, furunculosis and secondarily infected dermatoses. **Dose:** Applied topically, 3 or 4 times per day. **Sup:** Tubes of 5 Gm. and 20 Gm.

Kanulase, Smith-Dorsey, Division of the Wander Company, Lincoln, Nebraska. Tablets, each containing 320 units cellulase, 150 mg. pepsin, 200 mg. glutamic acid HCl, 500 mg. pancreatin, and 100 mg. ox bile extract. Indicated to diminish intestinal gas in healthy persons and in patients with digestive disorders. **Dose:** 1 or 2 tablets with meals. **Sup:** Bottles of 50.

Metamucil Instant Mix, G. D. Searle & Co., Chicago, Illinois. Powder containing psyllium hydrophilic mucilloid with citric acid and sodium bicarbonate. Mixed instantly without stirring, forming an effervescent, lemon-flavored liquid. Indicated for constipation therapy in all age groups. **Sup:** Foil-wrapped, premeasured-dose packets in boxes of 16.

Neutra-Carb Tablets, Burton, Parsons & Co., Washington, D. C. Tablets, each containing 0.84 Gram calcium carbonate, 0.13 Gram magnesium carbonate, 50 mg. ascorbic acid. Indicated for relief of gastric hyperacidity and for correction of any coincidental Vitamin C deficiency. **Dose:** Chew 1 tablet every 1 or 2 hours for full neutralization effect. **Sup:** Bottles of 100.

Rectal Medicone-HC, Medicone Company, New York, New York. Pink suppositories, the same as the regular Rectal Medicone with the addition of 10 mg. hydrocortisone acetate. Indicated in the presence of severe anorectal inflammation, pruritus and pain in hemorrhoids, acute and chronic proctitis, postoperative edema, cryptitis, pruritus ani and inflamed postoperative scar tissue. **Sup:** Breakback box of 12.

Sorboquel, White Laboratories, Kenilworth, New Jersey. Tablets, each containing 0.5 Gm. polycarbophil and 15 mg. thihexinol methylbromide. Indicated for the symptomatic treatment of both acute and chronic diarrheas. **Dose:** As directed by physician. **Sup:** Bottles of 50 and 250.

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*Diseases of the Colon & Rectum, Vol. 1, No. 5, Sept.-Oct. 1958.

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BOOK REVIEWS FOR PROCTOLOGISTS

PHARMACOLOGY AND THERAPEUTICS by Arthur Grollman, Ph.D., M.D., F.A.C.P. Lecturer in Pharmacology and Toxicology. The Medical Branch, and Professor and Chairman of the Department of Experimental Medicine, The Southwestern Medical School, The University of Texas, Attending Physician, Parkland Memorial Hospital; Consultant in Internal Medicine, Baylor University Hospital; Consultant, Veterans Administration Hospital, Dallas, Texas; Civilian Consultant, The Surgeon General, U. S. Air Force; Consultant, U. S. Food and Drug Administration. Fourth Edition, Revised and Enlarged with 217 illustrations with 2 in color. Page 1018. Published by Lea & Febiger, Philadelphia, 1960.

The Fourth Edition of this classical textbook on Pharmacology and Therapeutics continues to he highly recommended for the student. There has been great progress in both pharmacology and therapeutics during the past two years, since publication of the Third Edition. This required rewriting, additional material, deletions, and careful re-evaluations of the entire book.

The book is carefully edited to provide an excellent arrangement for teaching purposes. Although the text is very complete, and up-to-date, material of interest to the professional pharmacologist only is not included. The book is designed for the student primarily.

This is one of the most practical teaching textbooks known to this reviewer. It is highly recommended for the student, and will be a valuable addition to any physician's library.

"RADIATION THERAPY" by Walter T. Murphy, M.D., Director of Therapeutic Radiology, Roswell Park Memorial Institute, Buffalo, New York; Consultant in Radiation Therapy, U.S. Veterans Hospital Buffalo, New York; Associate Clinical Professor of Radiology, University of Buffalo Medical School. Published by W. B. Saunders Company, Philadelphia and London, 1959. Price $25.00.

This excellent text is based upon long experience as a radiotherapist. It deals with radiation therapy of cancer, emphasizing techniques, indications, and results and complications.

The illustrations add particular value to the text material. They are especially good for teaching purposes.

The book will be of particular value to the student, but should be part of the experienced radiologist's library as well. The author's point that therapy must be individualized is most important, and is obvious throughout.

The proctologist will be especially interested in the sections on cancer of the rectum and cancer of the anus. Both are excellent. The gastroenterologist will find an excellent chapter on cancer of the entire intestinal tract.

This is a fine teaching text, and one that can be recommended without qualification.

TREATMENT OF CANCER IN CLINICAL PRACTICE edited by Peter B. Kunkler, M.A., M.D. (Cantab.), M.R.C.P., F.F.R., Radiotherapist, United Birmingham Hospitals; Honorary Radiotherapist, Worcester Royal Infirmary; Clinical Lecturer in Radiotherapy, University of Birmingham; Anthony J. H. Rains, M.S. (Lond.), F.R.C.S., Professor of Surgery, University of London, Charing Cross Hospital Medical School, Hon. Surgeon, Charing Cross Hospital, formerly Senior Lecturer in Surgery, University of Birmingham; Honorary Surgeon, United Birmingham Hospitals; Late Hunterian Professor, Royal College of Surgeons; Examiner in Surgery, University of Birmingham. E. & S. Livingstone, Ltd., Edinburgh and London. 1959. 821 pages. Price $19.00.

This remarkably fine book represents the combined editing efforts of a radiotherapist (Kunkler) and a surgeon (Rains), both of England. The integration of the knowledge of the radiotherapist and the surgeon is essential for the proper management of cancer. The various authoritative contributors to this book, under the guidance of the two major Editors, have emphasized that technic depends primarily on clinical assessment of the biological potential and anatomical relationships of the cancer in each case. They thus integrate surgery, radiotherapy, chemotherapy, and hormone therapy.

As the Editors state, the work is designed primarily for students preparing for postgraduate examinations, but it should be of great value to the general surgeon, the radiotherapist and the dental surgeon. Although it is a large work, and quite complete, they state that it "has been planned to supplement and not to replace the standard works on operative surgery and radiotherapy."

The book is remarkably well illustrated, very well written, and the editing is excellent. It is recommended without reservation.

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